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130 A Dictionary of the Veterinary Art: containing all the modern improvements; and including as much of Comparative Anatomy, Physiology, Materia Medica, Chemistry, Pharmacy, Natural

History, etc., etc., as is connected with the subject; the whole illustrated with copper plates; and forming a work equally useful to the professional Veterinarian, the practising Farrier, the Farmer, and the Private Gentleman, in obtaining a knowledge of the diseases of horses and other cattle. By **Thomas Boardman**, Veterinary Surgeon to the Third (or King's Own) Regiment of Dragoons. London. 1805.

4to. No pagination. 36 copper plates. M., 10½ in. by 8 in.









A

*a John* **DICTIONARY** *Gray,*

OF THE

**VETERINARY ART:**

CONTAINING

**ALL THE MODERN IMPROVEMENTS;**

AND INCLUDING SO MUCH OF

COMPARATIVE ANATOMY,  
PHYSIOLOGY,  
MATERIA MEDICA,



CHEMISTRY,  
PHARMACY,  
NATURAL HISTORY, &c. &c.

AS IS CONNECTED WITH THE SUBJECT:

**THE WHOLE ILLUSTRATED WITH COPPER-PLATES:**

AND FORMING A WORK EQUALLY USEFUL TO THE PROFESSIONAL  
VETERINARIAN, THE PRACTISING FARRIER, THE FARMER,  
AND THE PRIVATE GENTLEMAN, IN OBTAINING A  
KNOWLEDGE OF THE DISEASES OF HORSES  
AND OTHER CATTLE.

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**BY THOMAS BOARDMAN,**

*VETERINARY SURGEON TO THE THIRD (OR KING'S OWN) REGIMENT OF DRAGOONS.*

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**LONDON:**

**PRINTED FOR GEORGE KEARSLEY, 46, FLEET-STREET;**

**BY T. DAVISON, WHITE-FRIARS.**

**1805.**

DICTIONARIES, Veterinary 219 and



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TO  
THE PRESIDENT, VICE-PRESIDENTS,  
COMMITTEE,  
*John* AND MEMBERS *Gray*  
OF  
THE VETERINARY COLLEGE OF LONDON,  
THIS DICTIONARY,

COMPILED WITH THE EXPRESS DESIGN  
OF FACILITATING THE EQUALLY HUMANE AND PATRIOTIC  
PURPOSES OF THE INSTITUTION

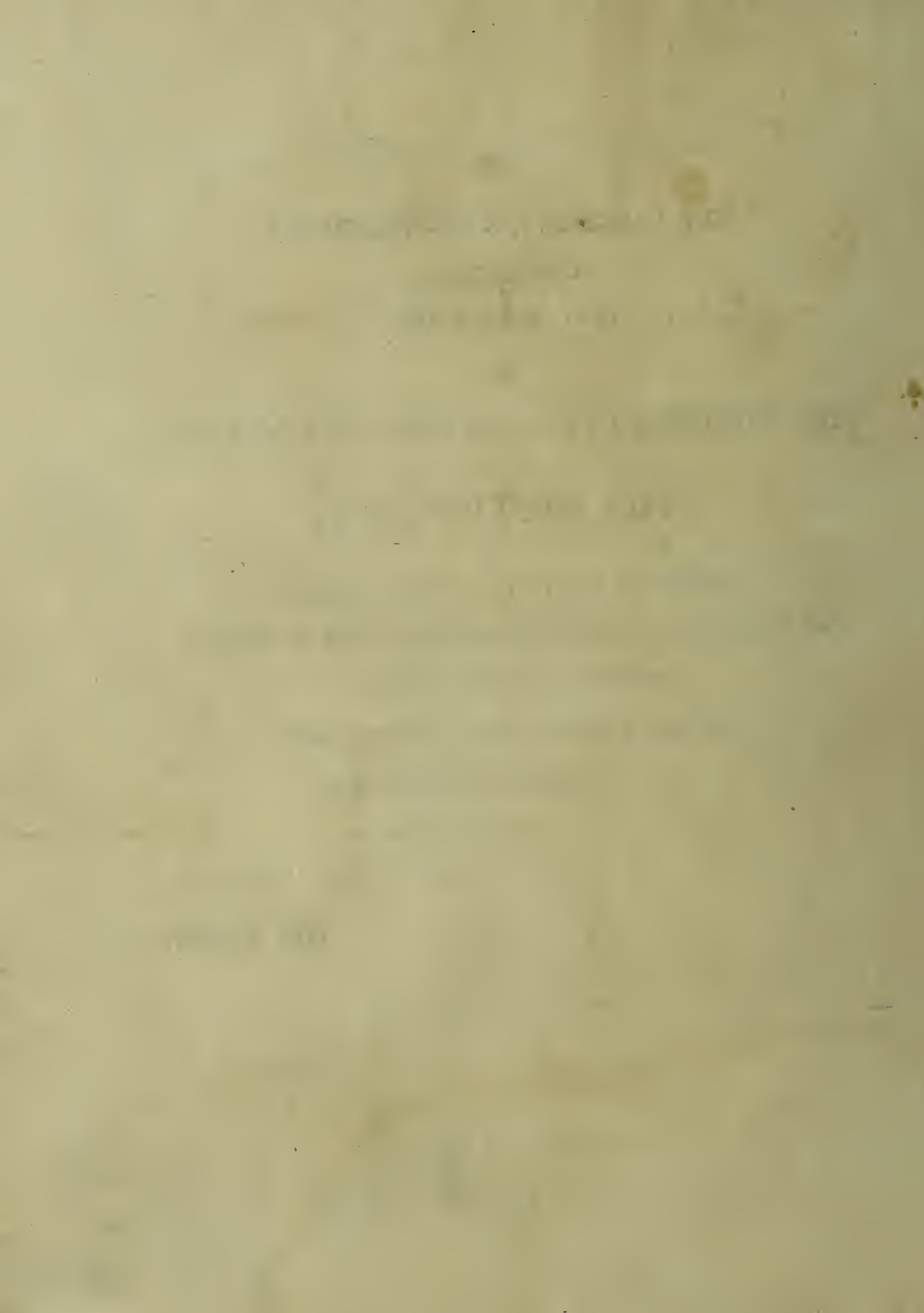
THEY HAVE CONDESCENDED TO PATRONISE,

IS RESPECTFULLY DEDICATED,

BY THEIR OBEDIENT,

AND VERY HUMBLE SERVANT,

THE AUTHOR.



## PREFACE.

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THE example of other nations, operating on the good sense of our own, having advanced that to the dignity of a science which before was exercised blindly and without principles, and rather to the detriment than advantage of the objects it was intended to serve, it appeared to the author of the following sheets, that a comprehensive view of all that immediately or collaterally belongs to the Veterinary art, would be no unacceptable offering to the public, in the convenient form of a DICTIONARY.

Convinced, however, as he was of the extensive utility of such a work, he long considered the undertaking as an act of temerity. Aware of the obsolete character of almost all the books of farriery that appeared before the days of GIBSON, and no less so of the defects even of that truly enlightened and scientific writer; aware of the narrow limits to which the knowledge of the anatomy of brute animals has, as yet, been extended; aware of the loose and imperfect state of those analogies which have been supposed to obtain between man and the larger quadrupeds, and sensible of the vague manner in which, under that presumption, veterinary remedies have been directed in particular diseases;—he hesitated long before he could determine to commit himself in a work, which, in the very nature of things, must be chargeable with many imperfections, and open to much future criticism.

Yet, on the other hand, his prospects were not without encouragement. The sun of veterinary science had already dawned on our island. His irresistible beams had already pierced through the clouds and thick darkness in which it seemed to have been permanently enveloped. His approach, too, had been happily indicated in the labours of an eminent northern veterinarian; who, breathing a medical



atmosphere, and imbued with principles which eminently qualified him for such a pursuit, investigated with considerable acuteness, and exposed with the most decided success, the most common causes of disease and lameness in horses. Nor had these been the only efforts to apply, as far as the analogies were obvious, the doctrines and remedies of human medicine to the structure and maladies of the brute creation. Surgeons in country practice had long seen, with a mixture of indignation and sorrow, the ignorant cruelties practised on the latter by their footy operators; and, unwilling to trust even their dogs to such merciless hands, were led to exercise *their own skill* on the animals which belonged to themselves. Still, however, a false pride restrained their practice within their own stables and cow-houses, and a necessary concession (as they thought) to public prejudices kept back the salutary results of their endeavours, and occasioned few, and those only casual, improvements to be made in veterinary science. At length the removal of this spell, which prevented the free exercise of genius and the operations of useful experiment, was reserved for the patriotic founders of the VETERINARY COLLEGE OF LONDON, to whose zeal and public spirit the country is now indebted for a body of rational and enlightened practitioners, dispersed through every county, as well as for many ingenious and elegant publications on the different branches of their art.

It is indeed the indispensable duty of the author to acknowledge his *almost unbounded obligations to the works of these gentlemen*; as well as to the yet more eminent labours of the late and present PROFESSORS of that excellent institution, as he has constantly endeavoured to evince in the several articles which have been derived from them individually. Nor should he omit to acknowledge the high sources whence the most splendid and useful of the graphical illustrations (so indispensable in a work of this kind) have been procured; most of them *remarkable for their minuteness and accuracy, beyond any anatomical representations, even of the human body*, which appear in similar publications.

Such have been the advantages, and such the impediments, under which the author has laboured. To the details of the latter he might very justly add, the nature of his services as a military practitioner; his unavoidable absence, nay al-

most immense distance, from the press, on that account ; and the necessity of procuring assistance from others less competent, perhaps, to the task, than even himself. All, therefore, that he presumes to claim, beyond the merit of good intentions towards his professional brethren and the public, is that of having made *as good a use of the materials which offered themselves to his examination as the case would admit* ; and, under this impression, he confidently relies on the candour with which both will receive *this first attempt to unite into ONE FABRIC the scattered and imperfect members of a SCIENCE universally acknowledged to be, as yet, in its EARLIEST INFANCY.*

Dundalk, May 13th, 1804.

A NEW EDITION OF  
*THE EDINBURGH PRACTICE*  
OF  
PHYSIC, SURGERY, AND MIDWIFERY.


THE extraordinary demand for the above Work has induced the Editor, in this edition, to extend certain parts of it, which, in the opinion of some judicious characters in the medical world, were exhibited before in too narrow a compass; and also to add to it a volume on the subject of MIDWIFERY, by which it is rendered a *cheap and complete Medical Library*, no less suitable for the British Practitioner than serviceable as a guide to Physicians and Surgeons of the navy and army in tropical climates.

THIS WORK CONTAINS,

1. An Introductory History of each Branch of the Medical Profession.
2. The Theory of Medicine, Physiology, Pathology, and Therapeutics, from Dr. Cullen and other Edinburgh Professors.
3. Cullen's Nosology complete, in English.
4. The History, Distinction, Causes, and Cure of every human Disease, agreeably to the approved Classification and Doctrines of the celebrated Cullen.
5. The latest Improvements suggested by Medical Writers of the first Eminence: amongst whom are, Drs. Cullen, Monro, Gregory, Fordyce, Percival, Beddoes, Fothergill, Lettsom, Garnett, Heberden, Denman, Moseley, Rush, Trotter, Saunders, Currie, Sims, Haygarth, Houlston, Willan, Simmons, Jenner, Clark, Bradley, &c. &c. Messrs. Hunter, Bell, Ilyffe, Home, Earle, Abernethy, Latta, Baynton, Kendrick, Kentish, Rumsey, Wilson, and others.
6. Cases illustrative of the Treatment recommended in every Disease of difficult Management.
7. Upwards of Six Hundred authentic Formulæ from the Books of the public Hospitals and Dispensaries; the Lectures and Writings of Medical, Chirurgical, and Midwifery Teachers; and the private Contributions of distinguished Practitioners in Edinburgh and London.
8. A number of elegant Copper-plate Engravings of Chirurgical and Midwifery Subjects.



A  
**LIST OF THE PLATES,**  
 WITH  
*A DESCRIPTION OF THEIR CONTENTS,*  
 AND  
 DIRECTIONS FOR PLACING THEM.

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II.	The first view of the muscles of the horse.		Different views of the horse's foot ; shewing its external and internal structure.
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VI.	Outline of the preceding.		

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A view of the genital parts of an hermaphrodite lamb.

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### XXIX. VISCERA.

Views of the thoracic and abdominal cavities of the horse, with the viscera *in situ*.

## ERRORS.

ART. BLISTER, *omitted*. See the articles CANTHARIDES, OINTMENT, and SPAVIN, where this deficiency is fully supplied.

DROWNING, *omitted*. See RESUSCITATION.

HOG, *omitted*. See SCROFA.

NERVE. For a description of the plate exhibiting the distribution of the system of nerves in the horse, see the article SYSTEM.

# DICTIONARY

OF

## THE VETERINARY ART, &c.

A B D

**A**BATE, a term used in the manege. A horse is said to abate, or take down his curvets, when, working upon curvets, he puts both his hind-legs to the ground at once, and observes the same exactness in all the times of his doing so.

**ABDOMEN**, that part of an animal vulgarly called the belly. Its contents on dissection are these: When the *abdomen* is opened, the first thing that offers itself to view is the *peritoneum*, which is a kind of bag made of a thin membrane of pretty close texture, and yet capable of a considerable extension, and of returning to its former state. This bag contains the greatest part of the *viscera* of the lower belly, but in a particular manner. In several parts of the convexity there are several depressions, which form a kind of cells, which contain the viscera within the *peritoneum*, namely, the guts, the stomach, the liver, the spleen, &c. See **VISCERA**.

The *ligaments* which serve to sustain most of these viscera, are nothing else but a particular kind of doubling of the *peritoneum*, accompanied with a portion of the cellular and membranous web, filled with fat, which covers its external surface; such as the ligaments of the liver, the spleen, the uterus, and *mesentery* itself, which is the common ligament of the guts,

A B D

and is formed by a doubling of the *peritoneum* accompanied with the cellular web. This lies on the surface of the *peritoneum* throughout its whole extent; and is of a particular texture, consisting of several membranous cells, by means of which the *peritoneum* is united to the sides of the belly. The parts contained in this web, which may be seen without opening the *peritoneum*, are the *kidneys*, the *ureters*, the *bladder*, the *lower large blood vessels*, &c.

The internal surface of the *peritoneum* is smooth and sleek, and is continually kept moist by a serosity which transudes through the pores throughout its whole extent. This moisture is necessary to render the motion of the intestines more easy, because otherwise the friction would cause a painful sensation.

The cellular web has four processes, two of which accompany the crural vessels, and the other two the spermatic vessels in horses. These processes have been generally supposed to be made by the *peritoneum*, but this is a mistake.

The *peritoneum* being opened, you may discover all the viscera of the lower belly. On the right side is the *liver*, the *gall bladder*, and a part of the *gut colon*: on the left side of the *spleen*, a part of the colon, the *caul*, the bottom of the *stomach*, and the *pancreas*: in the upper part



you may perceive the two orifices of the *stomach*, the *gut duodenum*, the trunk of the *vena porta*, the lower *vena cava*, and the *great artery*.

The *omentum* or *caul* lies over the intestines, and is a very fine membrane larded with fat, somewhat like net-work; it reaches from the bottom of the stomach to the umbilical region. It resembles an apron tucked up. The fore part of it is connected to the bottom of the stomach, to the duodenum and the spleen; and the hind part to the colon. The use of it is to preserve the suppleness of the fibres of the guts, duodenum, and colon, to which it is connected: it sends sulphureous particles to the liver for the preparation of the bile, and by its unctuousity abates the acrimony of the blood.

The *œsophagus* or *gullet*, being a part of the intestinal canal which is extended from the mouth to the *anus*, may properly be taken notice of in this place. It reaches from the bottom of the mouth to the diaphragm; next to this is a sort of bag called the stomach; and the remainder hath the general name of intestines or guts. The gullet descends along the neck behind the wind-pipe; the upper part which is a little dilated, is called the *pharynx*. It has four coats: the first is common to the neighbouring part; the second is fleshy, and is composed of longitudinal and circular fibres; and the third consists of nervous or tendinous fibres crossing each other every way: the fourth is called the villous coat; it is very porous, and always besmeared by a clammy liquor proceeding from the glands lying behind it.

The *stomach* is a membranous bag seated behind the diaphragm or midriff. It is in shape like the bellows of a bagpipe, and has two orifices; the right of which is joined to the gullet, and the left, named *pylorus*, to the guts. It consists of the same membranes and coats as the gullet.

The *intestines* or *guts* are six in number; namely, the *small gut*, which in a man is divided into the *duodenum*, the *jejunum*, and the *ilium*, and is commonly about twenty-six yards in length; the *cæcum* or *blind gut*, the three *colons*, and the *straight gut*. The three colons are divided by two small necks, each about half a yard long. On the upper and under sides there are two ligaments, which run along the surface, and serve to purse up this gut, which with a valve on the inside serve to keep the aliment from passing off too hastily, that the nutritious juices may be extracted. The straight gut runs directly along from the colon to the fundament, and is half a yard long. The guts have the same coats as the gullet, but are con-

siderably thicker in these last mentioned, and like it are always moistened by the liquor proceeding from the glands.

The guts are fastened to the back by the mesentery, which is about nine inches broad from the guts to the back. It takes its rise from the third vertebræ of the loins, and consists of two membranes, which are full of small glands and blood-vessels, and is formed by the doubling of the *peritonæum*. It forms several folds along its circumference, not unlike a ruffle, to which the small guts are connected.

Having thus taken notice of the *intestinal canal*, and its several parts, it will not be improper to make some observations on the *progress of the chyle*. If you open a dog that has been just killed two or three hours after he has been fed, you will see on the guts, especially those that are small, a great number of little white vessels called *lacteals*, which glide between the two membranes of the mesentery, and communicating with each other, advance to the glandulous body placed in the middle. From this substance other lacteal veins proceed, which differ nothing from the former, but in being fewer in number, and somewhat more large. These are called *secondary lacteals*, and are discharged into a cellular and membranous bag, generally placed on the first vertebræ of the loins, and is hid in part of the right appendix of the diaphragm. This is called the receptacle of the chyle. From this reservoir the thoracic duct proceeds, which runs along the vertebræ of the back, and towards the middle of the back turns to the left, and empties itself into a large vein called the *left subclavian*.

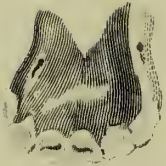
The *lacteal veins* are not only to be met with on the small intestines, but also on the large, which shews that an animal may be kept alive by nourishing clysters only.

The *liver* is a conglomerate gland of a very large size, of a reddish brown colour, and of a pretty firm consistence. It makes up a great part of the right side and a portion of the middle epigastric region, immediately below the diaphragm or midriff. In a horse it is divided into four lobes, to render it flexible in all violent motions, and so preserve it from danger. Of these the right lobe is much the largest, and is called the great lobe of the liver.

The *shape of the liver* is not regular, but accommodates its conformation to the adjacent parts. It is convex and smooth on the upper side, to tally with the diaphragm, to which it is connected, and whose motions it follows. Its inferior surface is concave, and unequal, having eminences and cavities which answer to the



*Age of the Horse Shewn by the Teeth.*



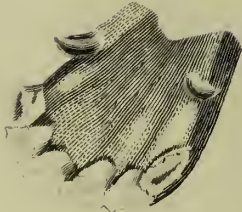
*Rising Three*



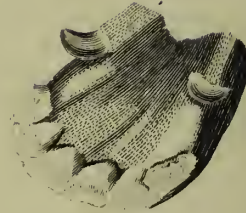
*Four Years Old Or*



*Rising Six*



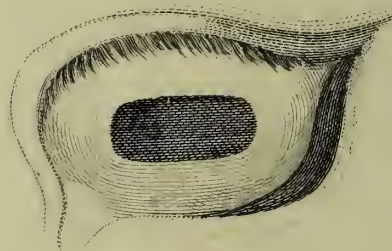
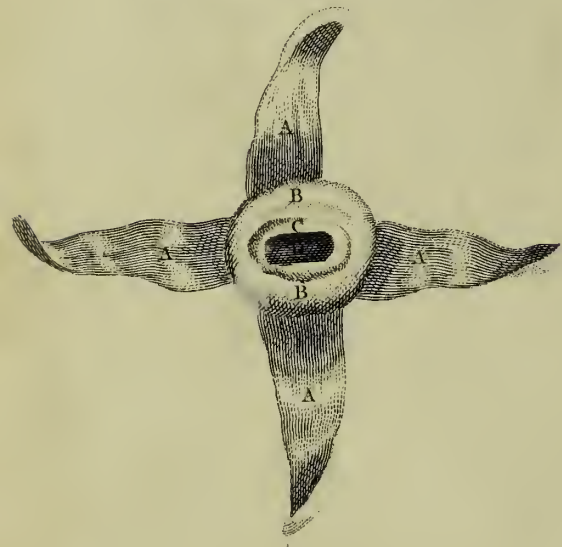
*Seven Years Old*



*Twelve Years Old*

*Eye of the Horse & its Muscles.*

*State of the Pupil in the Dark. Worms found in the trachea of Fowls.*



*In a Moderate Light.*

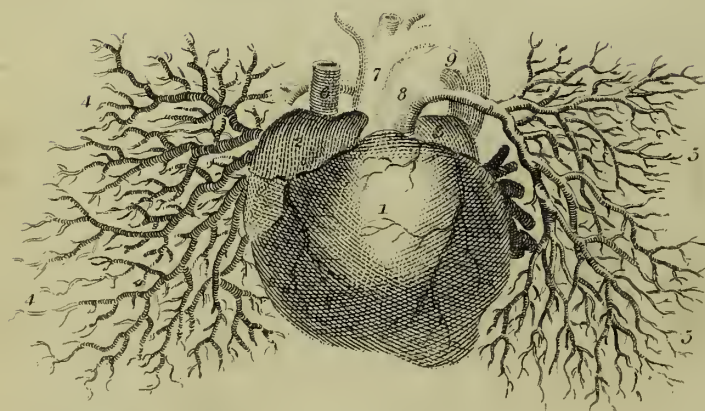


*In the Sun.*



*The Heart & its Blood Vessels.*

*The Vena Portæ &c.*





spaces that are between the organs. The eminences belong to the great lobe of the liver, to which the ancients gave the name of *porta*.

The liver is connected to the adjacent parts, but chiefly to the midriff, by means of four ligaments. Some reckon the umbilical veins a ligament, but this is very much doubted by others.

The liver is covered by a thin membrane, which however may be divided into two *laminae*, between which there is a great number of lymphatic vessels, which are observable both on the convex and concave surface. The internal lamina seems to penetrate the substance of the liver, and to divide it into a great number of small lobes, which may be easily distinguished in a hog.

The substance of the liver is an assemblage of a great number of small vessels of every kind, which appear to be distributed to a great number of vehicles or small bodies, called by some pulpos grains. These vessels thus distributed, may be distinguished into those that carry some liquor, and into those that bring it back. The first are the ramifications of the *hepatic artery*, of the *vena porta*, accompanied by the *hepatic nerves*.

The *vena porta* is a considerable trunk of a vein formed by two principal branches, one of which receives the blood which comes from the spleen, the pancreas, and one part of the stomach. It is called the *splanetic vein*. The other proceeds from the intestines and mesentery, and is called the *mesenteric*. This trunk of a vein penetrates the liver on the concave side; but, before its entry, forms two other branches, one to the right, and the other to the left. Likewise there are many lesser branches, which enter the vesicles of the liver. The other vessels which belong to the vesicles are branches of the veins, which correspond with the *vena cava*, and discharge the remainder of the blood which the *vena porta* has deposited in the liver. The union of these branches form three veins called the *hepatic veins*, which terminate in the trunk of the lower *vena cava* immediately below the diaphragm.

The *lymphatic veins* of the liver may be seen on both sides, where they form a wonderful kind of net-work. These veins generally empty themselves into the reservoir or receptacle of the chyle. The pulpos veins have each an excretory duct which, communicating with each other in the substance of the liver, are commonly called the *biliary pores*. When these ducts are united, they form a large one called the *hepatic duct*, which discharges the bile into the small gut near the stomach. It is propor-

tionably larger in horses than in other animals, because they have no gall-bladder. Some say this is wanting because it might be hurt by violent motions; but this cannot be the case, because many animals that are subject to as violent exercise as a horse, are not without a gall-bladder; and therefore we shall not pretend to guess at the reason, or why a large and constant discharge of the bile is required in a horse more than any other creature that feeds in the same manner.

The *use* of the *liver* is to separate this gall or bile already mentioned, and there is reason to believe it is from the blood brought by the *vena porta*. The gall is a yellow, bitter liquor, of a pretty fluid consistence, composed not only of a serum and salts, but also of unctuous particles, which form a liquor of a soapy nature, and nearly of the same taste, and is very useful to take old spots out of garments.

The gall being separated in the liver, it is taken up by the biliary pores, then runs into the hepatic duct, and is constantly discharged into the gut above mentioned. It serves to correct the aliment, and to prepare the chyle.

The *pancreas* is a conglomerate gland, of a very pale red, and of a pretty thick consistence. It is seated in the epigastric region, transversely, immediately below the stomach, reaching from the small gut to the spleen, to which it is united. The situation of the *pancreas* is such, that it may be reckoned to have two faces, an upper and a lower; two edges, the anterior and the posterior; and two extremities, one to the right, and the other to the left; that to the right, which is connected to the gut, is most considerable.

The *pancreas* is covered with two membranes, the one common, and the other proper. The common consists of the two leaves of the *mesocolon*, between which the pancreas is seated. The proper membrane immediately covers its substance, and is composed of many glandulous grains, beset with a vast number of vessels, whereof some carry a fluid to the pancreas, and some bring one back from thence. The former are the arteries and nerves; the latter are the sanguinary veins and lymphatics, as well as the excretory ducts of the glands.

The *excretory ducts* of the pancreas are very numerous, perhaps as many as the glandulous grains of which it is composed. All these ducts unite with each other, and from their union results one common duct, which carries a fluid from them all. It is called the *pancreatic duct*, and runs all along the pancreas, through the middle of its length, and empties itself into the small gut.

The *use* of the *pancreas* is to separate a fluid



called the *pancreatic juice*, of the nature of *saliva*, and serves conjointly with the gall to bring the chyle to perfection.

The *spleen* consists of a softish substance which may be readily extended, and is of a blueish colour, a little inclining to brown. It is seated obliquely in the left hypochondrium under the diaphragm or midriff, and immediately above the left kidney. Its shape is longish, tongue-like, and flattish.

The spleen is kept in its situation not only by resting on the adjacent viscera, but also by membranous ligaments which tie it to the diaphragm, and sometimes to the stomach itself, as also to the colon and the left kidney by means of the caul and the blood-vessels. It has two faces; that turned towards the stomach is unequally concave, and that turned towards the ribs which is convex.

The principal artery of the spleen proceeds from the *celiac*, the vein empties itself into the vena portæ. The nerves are very numerous, and form the *splenic plexus*. All these, when they enter into the spleen, are divided and subdivided into a great number of ramifications, and accompany each other to the last extremities of their divisions. They are contained in the common cellular capsule. The blood is extravasated among all these vessels, and kept in a web like cotton which is very fine, and spread throughout the whole extent of the spleen, and terminates in almost imperceptible cells which communicate with each other.

The *use* of the *spleen* is very hard to determine: however it is probable the blood is detained by this means a great while in the spleen, in order to prepare it for the separation of the bile, which is afterwards to be performed in the liver.

The *capsule atrabiliaris*, called by some the renal glands, are two glandulous bodies seated on each side, a little obliquely on the upper and more internal part of the kidney, and are joined to it by a fine cellular web, and are covered by the external tegument of the kidney itself, called the adipose membrane. The substance of these renal glands is soft and spongy, covered with a fine membrane, and their colour is yellowish. In a *fœtus* they are as large as the kidneys. They have a cavity which contains a yellowish liquor, though by some said to be black. The use of these is hitherto unknown.

The *kidneys* are two conglomerate glands of a firm consistence, and of a reddish brown colour. They are seated in the region of the loins, on the outside of the peritonæum, and within its cellular web, one on the right end, and the other on the left, between the last of

the false ribs and the bone called the *ileum*. The right lies upon the lower part of the liver, and the other under the spleen, which last is commonly placed higher than the other. The right kidney is somewhat triangular, the left oval, with the higher part bigger than the lower.

The *arteries* belonging to the kidneys are called the *emulgent arteries*, and are generally two, one for each kidney. The veins in the kidney accompany the arteries, and when they are united into one trunk, they are called the *emulgent veins*. A principal vessel belonging to the kidney is called the *ureter*. It is a membranous pipe which receives the urine, as it is separated by the kidney, to carry it to the bladder.

The kidney has two coverings; the first consists of the cellular web of the *peritonæum*, and generally contains a great deal of fat. This being removed, you may discover the proper tegument or covering of the kidney, which it surrounds. It consists of two *laminae*, which are united by a fine cellular web, and between these the lymphatic vessels creep along.

The kidney is composed of three different substances: the first is the *cortical*, which consists of a great number of blood and absorbent vessels with glandulous grains. The second is *tubulous*, and is composed of urinary pipes, which change into the third substance called the *papillary*, because it ends in ten or twelve papillæ full of small holes, which open into the pelvis or basin. This last is the membranous cavity of the kidney, sending forth tubes or pipes which embrace the papillæ like funnels.

The *ureters* are membranous canals or pipes which reach from the kidneys to the bladder, wherein they are inserted obliquely above its neck. The coats are supposed to be like those of the guts.

The *bladder* is a membranous bag, whose situation is well known, and is connected to the peritonæum only by its posterior and superior part, and therefore may be opened without hurting that part. The fore and lower part is called the neck. Its coats, like the intestines, are common, muscular, and mucous. This last being the inner, is exceedingly sensible.

Next the neck of the bladder is the *urethra*, through which the urine is conveyed out of the body, and is much longer in horses than in mares. The bladder is connected in horses to the rectum or straight gut, and the feminal vessels; in mares to the vagina, and in both to the os pubis, by ligamentous and fleshy fibres.

In the middle of the upper part there is a ligamentous chord called the *urachus*, which

terminates at the navel, and is a continuation of the membranes of the bladder. The kidneys separate the excrementitious fluid from the blood, called the *urine*, which passes through the papillæ into the funnels, and from thence into the bason, and is discharged by the ureter into the bladder, where it remains for some time by the help of a sphincter which surrounds its neck, and stops its passage, till an uneasiness happens, which causes a contraction of its muscular coat; then, with the assistance of the muscles of the belly and the midriff, the resistance of the sphincter is overpowered, and so the urine escapes. The urine is much of the same nature as the sweat, and they have such a relation to one another, that when the one is increased, the other is diminished.

The first parts to be considered in the *organs of generation* are *testicles* or *stones*, whose situation is well known. Their shape is oval, a little flattened on the sides; their coverings are common and proper: the common is the skin in which they are contained, which is divided into two parts, the one right and the other left, which outwardly appears like a seam. The proper membranes are, first, the *vaginal*, which consists of several membranous cells, and is a continuation of the cellular web of the peritonæum, and covers the whole testicle as well as its vessels. The second is a reddish membrane which adheres close to the former, and is only an expansion of a ligament. Under the vaginal coat there is a bag proper to each testicle, which surrounds them, and is only connected to the *epididymis*. Lastly, the *albugineous*, which is strong, and adheres closely to the substance of the testicle. It receives the spermatic vessels, and transmits them to the testis. The proper vessels are the *spermatic arteries*, which arise by a small beginning from the great artery, and the *spermatic veins*.

The *epididymes* are two, one to each testicle, which lie on the superior part in the shape of a caterpillar. Their substance is vascular, and all the vessels open into one duct called the *vas deferens*, by which it transmits the seed which it receives from the testes.

The *vas deferens* is a whitish pipe which looks like a nerve, and reaches to the seminal vessels and the urethra. Its use is to convey the seed to the seminal vessels and to the urethra itself at the time of covering a mare.

The *seminal vessels* are seated under the bladder, near its neck, and are divided into various cells, which communicate with each other. Each vessel has an excretory duct, which opens with a double orifice into the urethra on the under side, near the neck of the bladder.

**ABDUCTOR**, from the latin, *abducere*, to move, or draw from. Those muscles in an animal are called *abductors*, which draw backwards the moveable parts into which they are inserted. Several examples occur in the explanations of the anatomical tables in this work.

**ABIOTOS** (from *α* priv. and *βίωω*, *vivo*), a name given to hemlock, by some writers, because of its deadly qualities.

**ABLUENTS** (from *abluo*, to wash off). Medicines suited to wash off from any surface of an animal body, matters that injuriously adhere to them. Lotions, washes, injections, &c. are of this description.—This term has also been applied to that class of internal remedies named **DILUENTS**. It now, however, seldom occurs in medical writings, being involved in the terms *ablutent* or *detergent*. See **DETERGENTS**.

**ABORTION**, the birth of an animal before its due time. This accident seldom happens to brutes, though it is frequent with the females of the human race. In mares, cows, &c. the cause is generally some accident or external violence, in consequence of which, either the foetus is destroyed, or the secundines are detached from the womb. A premature birth, generally of a dead animal, takes place; and in that case, farriers have often injured the mother by the injudicious and unnecessary administration of violent medicines, such as hellebore, capsicum, &c. Nature is generally equal to the perfect restoration of the animal without any other assistance than a warm mash of scalded bran, and comfortable accommodation in her stall. The signs of approaching abortion, are, great uneasiness and restlessness, and a discharge of a bloody nature from the genital parts.

**ABORTIVE CORN**, a disease in corn, which shews itself when the stalk is about eighteen inches high; and may be known by a deformity of the stalk, the leaves, the ear, and even the grain. Corn in this state, if not directly unwholesome, may be considered as unfit for horses from its deficiency of nutriment.

The stem of abortive corn is generally shorter than that of other plants of the same age; it is crooked, knotted, and ricketty; the leaves are commonly of a blueish green colour, curled up in various forms; sometimes turned like wafer cakes, and often rolled in a spiral form. The ears have very little of their natural form; they are lean, withered, and shew very imperfect rudiments, either of the chaff or grain. All these symptoms are however only to be found in some of the plants; the stalks of others being often pretty straight, the leaves but little curled, and the chaff tolerably well formed; yet, in-



stead of enclosing a small embryo, white and soft at the summit, it contains only a green kernel terminating in a point, not unlike a young pea when forming in its pod. These abortive kernels have two or three points very visible; they are then fashioned as if two or three kernels were joined together at the base. When these kernels are ripe, or rather when they are dried up, they grow black, and so greatly resemble the seeds of *cockle*, that husbandmen, who are not acquainted with this distemper, often confound abortive corn with the seeds of that weed.

**ABSCESS**, a tumor or swelling of any fleshy part in consequence of a fluid having collected there. It is one of the terminations peculiar to inflammation. See **INFLAMMATION**.

The signs of approaching suppuration are, a continuance and increase of all the symptoms attendant on inflammation, notwithstanding the endeavours used to disperse it; a greater elevation and more palpable circumscription of the tumor; and lastly, rigors or cold shiverings, which are a certain indication of the forming of an abscess.

The horse is not more obnoxious to this disease than other quadrupeds. Some have imagined that the matter or pus in an abscess is produced partly by an alteration made in the fluids of the part, and partly by the breaking down of the over-distended capillary vessels, the dissolution of the fat, and of other substances about the tumor; all which are said to be blended with the altered fluids of the part. Others have supposed that suppuration is a kind of fermentative process carried on in the fluids of the part affected; while others again consider it to be a secretion of a peculiar nature.

But whatever may be the mode of this fluid being formed, the nature of it when once formed, is a circumstance to be determined by our senses: pus, or what is called *laudable* or good pus, is a cream-coloured, bland, homogeneous fluid, devoid of smell.

This, however, relates only to pus in a sound state; but it may become altered or acrimonious in its nature, when it certainly cannot be so very inoffensive a fluid. It is frequently found also mixed with blood and other fluids, when it loses its cream colour and becomes of a dark, dirty, brown hue; in which case, it is called purulent sanies. In other instances it loses its consistence, is much thinner than it ought to be, its colour inclined to yellow, somewhat resembling serum, and in this state it is termed *ichor*.

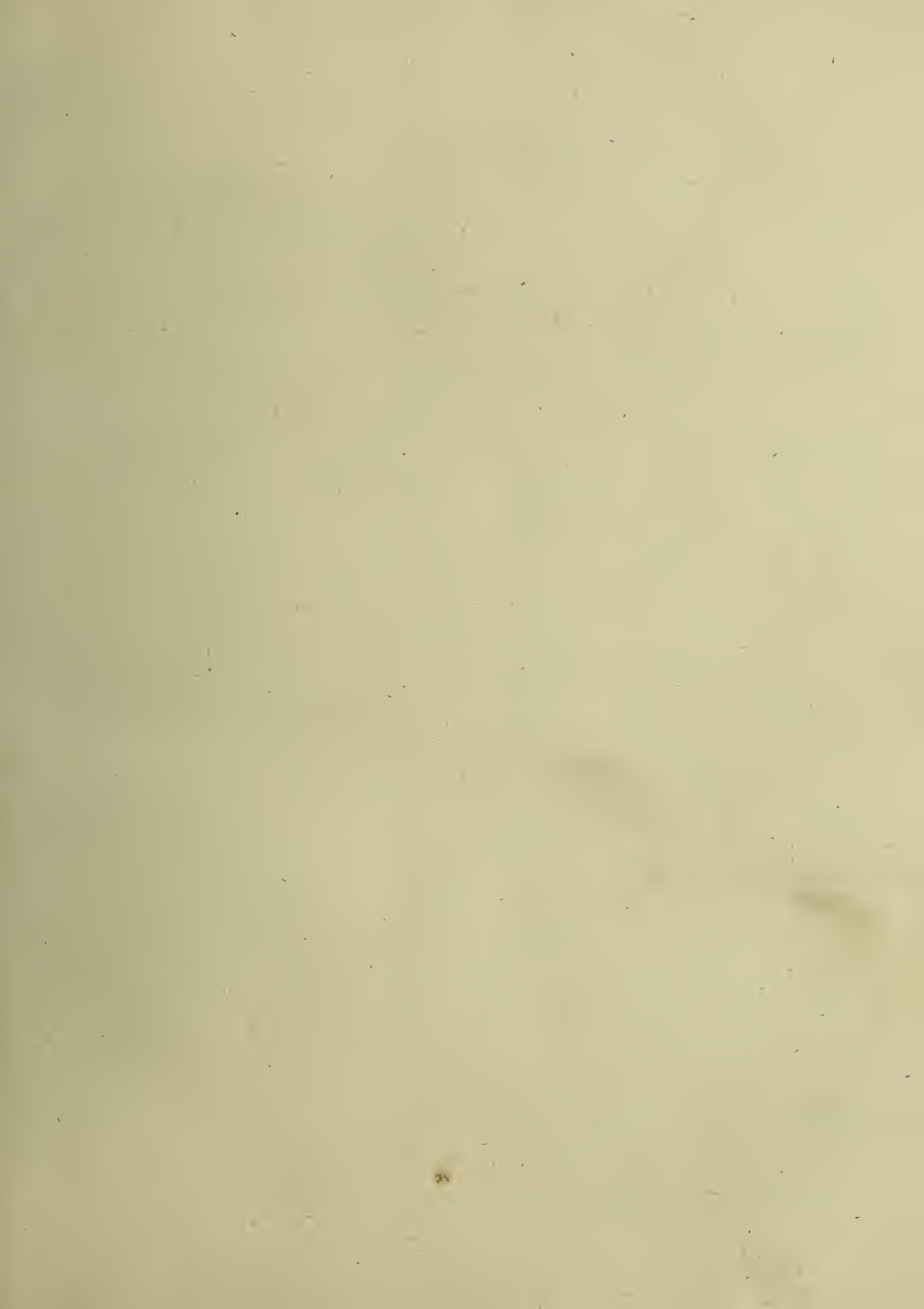
Abscesses may be divided, with respect to

their situation, into internal and external. We call them internal, when they affect the cavity of the head, of the chest, of the belly, or of any of the joints; external, when they have their situation in any of the outer parts of the body. The external, again, may be divided into deep seated, or such as are under the fascia of the muscles; and superficial, or such as are situated in the cellular and adipose membrane, or among the common integuments under the skin; which division will be found to require a considerable difference in their treatment.

Abscesses, with respect to their nature, may be distinguished; first, into abscesses of the glands, which may take place in any of the lymphatic glands throughout the body of an animal; and secondly, into critical abscesses, or such as happen after any acute disease, and supply the place of that critical resolution by which the disease, in its natural progression, should have been removed.

When we are convinced that pus is collected in any part, and forms what is called an abscess, that fluid must be considered as an extraneous body, and therefore the first general consideration is to procure a speedy vent for it. It is however a general rule, not to make an opening till we are perfectly sure that matter is formed, and in many cases, not till we are certain of the abscess being come to maturity, as it is called; that is to say, not till it appears that the increase of the disease is stopped, and all the pus which we may suppose would be formed in the tumor is already collected there.

It has been already said, that when pus is forming in an abscess, the progress of the inflammation is increased, the tumor becomes more elevated and circumscribed, rigors and shiverings take place, and lastly, the fluctuation of the matter is evidently felt on pressing the part with the fingers. This holds good with respect to those abscesses particularly that are seated in the superficial parts of the body, in the cellular and adipose membrane; but in deeper seated abscesses, these signs are not very evident. Habit therefore must go a great way in assisting the veterinary surgeon to form a determination here. By frequently seeing and touching deep-seated abscesses, he will become sensible of the fluctuation, though deep. We must not, however, fail to attend particularly to the mode of their formation and progress. Whenever a soft tumor, though not having all the common signs, shall have been formed with great pain, and when it has come on after some external vio-



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lence, or some acute distemper, there is good reason to conclude that matter is at least forming in the part.

But there seems to be one farther point necessary to be considered, and that is, by what criterion we shall judge whether the matter in these deep-seated abscesses be completely formed, or, in other words, whether it be the proper time for *giving vent to it*. And here, the veterinary surgeon must constantly bear in mind this axiom, that the animal will shew signs of greater pain and fever *while the matter is forming*, than when it is *formed*.

If therefore, after the fore-mentioned symptoms attending a tumor, and particularly after the shiverings, we should perceive a remission of the violence of the symptoms, without any sensible diminution of the volume of the tumor, or rather, perhaps, with an increase of it, we may then conclude that the matter is completely formed. This rule, however, though very extensive, is not, as we shall find, applicable to every possible case; since, when we come to consider the treatment of each particular abscess, we shall find one or two instances, in which we have scarce any other criterion to judge of the existence of matter except the violence of the pain, and hardly any other motive to determine us as to the necessity of making a speedy opening in the part.

Having thoroughly made ourselves masters of all the signs or indications of existing suppuration, the next business is to consider of the mode of giving vent to it. This may be done in three ways; by nature, by incision, and by a seton or cord; all of which it may be proper occasionally to adopt, according to the different situation or nature of the abscess.

In all superficial abscesses seated in the cellular or fatty membrane above the fascia of the muscles, particularly if they be not of any considerable extent, in general there can be no harm in leaving them to nature, so as to let them burst of themselves. The best application to an inflamed abscess advancing to suppuration, is something of an emollient kind, that shall keep the parts supple and as easy as possible. Poultices of fresh cows'-dung and lard should be applied, or those made with boiling water and the linseed cake powder, afterwards boiled together and properly secured by bandages on the part, which should first be well soaked in hot water, or fomented with flannels wrung out of it.

In these superficial abscesses the same application may be continued after the tumor has burst, and if there be any induration existing in the surrounding parts which does not give way

in a few days to emollient cataplasms, the addition of a small portion of mercurial ointment spread on the surface of the poultice will greatly assist in softening it. This plan should be continued till all the matter is evacuated, and all the inflammation and hardness are dispersed; when it may be proper to lay aside the emollients, to cover any little sore that may remain with a pledget of basilicon, and to make use of pressure by bandage to hasten the consolidation of the parts.

If the seat of the abscess be in the glands near the skin (which is also a superficial abscess), it may be necessary to make use of more stimulating applications; for, in these cases, the suppuration is generally very tardy, and requires to be quickened. Poultices of pollard, boiled turnips and lily roots, with a proportion of turpentine, answer this purpose. (See *POULTICE*.) But if the superficial abscess be of any extent, we shall find, that the opening made by nature will not be sufficiently large to evacuate the pus. We shall therefore be under a necessity of making an artificial opening, and the best mode of doing this is by a free even incision with a clean-cutting knife. The opening should be made without any regard to the direction of the muscular fibres, and in the longest, not the longitudinal, axis of the tumor, unless that should prove the longest, which is seldom the case, for in these swellings the transverse axis is usually the longest.

This kind of abscess, when it requires an opening on account of its size, may likewise be punctured as early as the matter is formed; and although there should be some little hardness, it need not hinder the operation, for that will easily be resolved in the course of the cure. In general, where it is necessary from the size of a superficial abscess to open it, the sooner the opening is made the better, as it puts a stop to the progress of the disease, and prevents the skin from being thinned to a considerable extent, so as to occasion the subsequent loss and destruction of it. But when the abscess happens in the superficial glands, it is much better, if possible, never to open it by artificial means; because, as the cure of the distemper depends upon the melting down of the whole substance of the gland, the longer the pus is permitted to sojourn in the part, the more completely will this effect be obtained.

As in the superficial abscess which is not glandular, early opening is to be recommended, in order to stop the progress of the disease; so, in the *glandular abscess*, we interdict it with a view to encourage the melting down of the diseased parts, on which the cure principally depends. Again, if the glandular abscess be so large as to



require opening, it will occasionally happen that the best mode of doing it will be by a seton (see SETON), which will be found infinitely preferable to incision, because the object is not to save, but to destroy the affected part.

In the deep-seated abscess, or that which is under the fascia of the muscles, where there is in general no affection of the skin, if the tumor does not advance kindly to suppuration, instead of the suppurative cataplasm recommended in the other abscess, we may use with propriety, and with good effect, any of the warm stimulating liniments employed at the COLLEGE (see LINIMENT). But in these deep-seated abscesses we must pursue a very different mode of treatment from that which we have just recommended for the superficial abscess. In the latter, although, when an opening is required, it may be useful to have recourse to it early, yet no great danger can attend a little delay, especially since it has been observed, that some of them might be left to burst of themselves: but, in the deep-seated abscess, however small the extent of it, not only the case can never be cured without an artificial opening, but it is likewise of the utmost consequence that this opening should be made as soon as the veterinary surgeon's knowledge and penetration lead him to judge, by attending to the circumstances already mentioned, that the matter is actually formed.

The nature of the parts surrounding the matter is this: In the fore part of the tumor there is a strong inelastic tendinous expansion, forming a considerable resistance to the distending power of the fluid within; so that, until this resisting fascia be stretched to such a degree as to break, the matter cannot possibly come forward to the skin. But the back part and sides of the abscess are of a very different nature: they consist either of soft muscular fibres connected with yielding cellular membrane (proper substances either to be destroyed by the pressure of the incumbent fluid, or to transmit that fluid through all the interstices of the muscles, so as to form burrows, holes, or *sinuses* for the matter, which extends the mischief to the neighbouring parts, or perhaps diffuses it through the whole of the limb), or else these parts may be thin membranes, as in the instance of an abscess under the fascia of the muscles of the belly, where sooner than the strong tendinous expansion will burst, the matter will be more likely to pierce the peritoneum and evacuate itself into the cavity of the abdomen, where it must generally prove fatal. Or lastly, the matter may be seated near the surface of some bone, where if it be suffered to remain, a caries may be the consequence. From

all these circumstances the necessity of making an early opening will appear; and it will likewise be evident, that the opening should be made by incision. It is proper indeed that these deep-seated abscesses should be opened very largely, and that the fascia covering them should be freely divided, in order that the operator may get fairly at the bottom of the abscess, so that if there be any sinuses running among or between the interstices of the muscles, he may either be able to lay them open, or by tracing the direction in which they run, make counter-openings wherever they may be required.

In the inside of most abscesses we likewise meet with portions of the cellular or adipose substance, or perhaps of separated coagulable lymph, which do not make part of the parietes of the cavity, but run through the middle of it, forming so many little bars of flesh, passing across from one side of the abscess to the other. These must be searched for with the finger, and wherever we find them, they must be cut through with the knife. Sometimes we shall meet with them of considerable thickness, and much indurated.

Nor should it be conceived, though this rule of the early opening of the deep-seated abscess is founded on theory, that it is wholly unsupported by practice. On the contrary, by opening these abscesses early, they have sometimes been cured, though extremely large, and containing very large quantities of matter, in a month or six weeks; while other tumors of this nature, which, from their slow progress in the early stages, have been either neglected by the owner, or suffered to come forward, or ripen, as it is commonly called, have kept the animal six months under treatment; during which time, he shall have been in imminent risque of his life. This tedious prolongation of the complaint has been entirely owing to the matter being suffered to remain longer in the part than was necessary, by which sinuses have been formed, the number and direction of which it was, at first, perhaps impossible to discover, and which, having manifested themselves with painful and aggravated symptoms in the course of the cure, have at length required a separate and particular treatment. In general, when once matter is formed in a tumor, it may be considered as ripe enough, and therefore fit to be opened.

But this rule of opening deep-seated abscesses as early as possible, is not without its exception. The only circumstance however, which may be said to form a general exception, arising from the nature of the disease, is in the case of *critical abscesses*, or tumors formed to carry off







the remains of something morbid from the system. Here nature, exhausted by the violence or continuance of the disease, and exerting her last efforts to expel the enemy from the constitution, is sometimes deficient in powers to produce that degree of inflammation sufficient to prepare or to secrete the fluids in a proper manner, so as to form well-concocted, good pus. These critical abscesses, though occurring very rarely either in the horse or other quadrupeds, from the simplicity which uniformly characterises the diseases of the more imperfect animals, are nevertheless to be met with occasionally, and may be known by their happening after signs of fever or other general indispositions and weakness have existed for some time. It is evident, therefore, that these should not be opened too early, as we shall thereby disturb nature in her operations, and she may never after be able to execute them completely. We shall give vent to crude, unconcocted, unprepared fluids, as it were, and only carry away a part of what the constitution wishes wholly to get rid of.

It is most advisable in these cases, to wait till the inflammation appears to be raised pretty high, and till the disease of the habit seems to be all transferred to the part; and this an accurate observer may distinguish in the change from a very morbid and sickly, to a more healthy and promising state of general health, whilst at the same time the swelling advances.

In these critical abscesses, we may therefore, in general, wait to observe the turn and progress of the disease; unless there should be some circumstance, of material consequence, which indicates a contrary intention: as when we have reason to apprehend that the matter may make its way either into the cavity of the thorax or abdomen, or when it may injure some part of consequence. There may be some cases, likewise, where the critical suppuration is going on very slowly, to the utmost hazard of the animal's life, and when the part seems to require an additional stimulus. To such a kind of slow critical tumor, a blister may be applied (see BLISTER); or we may even venture to let out some of the matter by passing a seton (if that be practicable) through the abscess, which, by long continuing to discharge, may expel the disease.

It is also another general rule in the treatment of abscesses, to lay open all the *sinuses* and *cavities* we may find belonging to them. However judicious and salutary this practice may be, there are some cases in which it is needless, and others where it is impossible. For instance,

it is scarcely ever necessary to open superficial or cutaneous sinuses, whose direction is upwards, from which the matter may be readily expressed, and which may afterwards be cured by proper compress and bandage. If it should so happen that the *bottom* of the sinus is situated in a *depending part*, and the opening of it above, when it may be impossible to force out the matter by compress and bandage, it becomes absolutely necessary either to lay open the sinus through its whole extent, or to open the bottom of it, and pass a seton through the rest. When these sinuses are neglected, they become fistulous, and require a distinct treatment in some respects. (See FISTULA.)

Nor need we in general to lay open sinuses, whose opening is in a depending part, for in these, the matter, finding a ready issue of itself, the sinus will soon be closed. Neither is there usually any necessity for opening sinuses which are situated in such a manner that a counter-opening may be made with facility, and the lodgment of the matter prevented.

When a superficial abscess is opened, the pus is to be pressed out of it very gently; for it is bad practice to squeeze all the parts of an abscess with violence, in order to press out every drop of matter contained in it. The surgeon, in doing this, counteracts the views of nature; for strong pressure, upon parts which are still in a suffering state, increases the inflammation, and renders the suppurating process longer. The complete evacuation of pus from an abscess, rather retards than accelerates the cure; since, in most abscesses that have been opened, there are still some of the surrounding parts in an inflammatory state and tending to suppuration, to which nothing can encourage them more, nor of course tend to relieve them sooner, than the contact of that mild, bland fluid, called *laudable pus*.

To the superficial abscess which has been left to break of itself, nothing should be applied, but *emollient* poultices, without any tow or other intervening substance. To those which have been discharged by an incision, very little else is necessary, provided the size of the opening has been in proportion to that of the cavity. *Tents*, crammed into the aperture, prevent the matter from flowing out as it is formed, and are therefore pernicious; at the same time, as the powers of restoration in brute animals are particularly strong, some soft tow may be introduced with a probe at the *upper* and *lower* ends of the wound, to prevent its healing outwardly before the cavity is filled up firmly with new flesh. Ab-

cesses are to be *prevented* by the remedies directed under INFLAMMATION.

**ABSORBENT MEDICINES** (from *absorbeo*, to *drink up*). All medicines which have the power of drying up redundant humours, either internally or externally, are thus denominated; or dry bodies suited to suck liquids into their pores. In this general sense the term used to be applied, but now very seldom. It is almost strictly confined to certain earths suited to take acids into their pores, and at the same time destroy their acid quality, such as chalk, &c. which are generally called *Antacida*.

**ABSORBENT VESSELS.** These are vessels which take up any fluid from the surface of an animal body, or of any cavity in it, and carry it into the blood. They are denominated, according to the liquids they convey, **LACTEALS** or **LYMPHATICS**; the former conveying the chyle, a milky liquid, from the intestines; the latter lymph, or a thin pellucid liquor, from the places from whence they take their origin; or any fluids that are extravasated, and convey them into the circulating blood: some consider small venal ramifications as the absorbent system. (See **LACTEALS** and **LYMPHÆ Ducts**.) The following kinds of absorption take place in animal bodies; viz. the nutritious matter is absorbed from the intestines, by the lacteals, which are the same *absorbents* as are every-where else; secondly, by bibulous orifices over the external parts; thirdly, by the same kind on the internal surfaces of all cavities.

As these vessels are the same, as far as we know, in brute animals, there is no impropriety in speaking of them, as they are known to exist in the human body.

As to absorption through the human skin, let it be considered, that the use of baths, fomentations, &c. demonstrate how great a quantity of fluid may be received into the body in this way. After rubbing the hand well, it hath, in a quarter of an hour, imbibed an ounce and a half of warm water; at the same rate then, the whole body would have received six or seven pounds. And, as Dr. Hunter observed, this matter is demonstrated beyond a doubt by the following experiment made on a living dog: an opening was made into the cavity of his belly, and three quarts of warm water were injected and secured. In about six hours after he was examined, and not above four ounces of the water were remaining there. But this power of absorption has been observed by Dr. Monro, senior, of Edinburgh, to lessen with the strength.

Farther satisfaction on this subject may be received from what is said on the power of the

external absorption of the human body by Dr. Wilkinson, in the Medical Museum, vol. ii. p. 117, &c. And with respect to absorption in the internal parts, see Dr. Hunter's Medical Commentaries; also Observations by Dr. Garner, in the Med. Mus. vol. ii. p. 229, &c.

**ACETATED** (from *acetum*), any thing partaking of the nature or prepared with the assistance of vinegar. Thus the medicine formerly called *sugar of lead*, being a salt of that metal prepared by dissolving ceruse (the *oxyd* of lead) in vinegar, and afterwards obtaining the crystals (or *sugar*), is named in the new dispensatory, *Acetated Ceruse*.

**ACHE**, a violent pain in a part, existing independent of any motion, swelling, or other apparent alteration; of course, an affection only to be discovered in brute animals, by the common signs of **PAIN**. The bones and joints of horses are most obnoxious to aches, in consequence, too often, of having been unmercifully ridden, and afterwards exposed to cold. Some diseases are designated by this term, as the belly-ache, the tooth-ache, &c. (See **RHEUMATISM**.)

**ACIDS**, the name of a very powerful class of substances used in veterinary medicine. The salts of this order are very numerous; but as we need none but those so employed, it is only of the *mineral* or *fossil* acids we mean to speak in this place.

These are distinguished by the names of the concretes from which they have been principally extracted; the *sulphur* from sulphur; the *nitrous* from nitre or saltpetre; and the *marine* or *muratic* from common sea-salt. The form they are generally in, is that of a watery fluid: they have all a remarkable attraction for water: they imbibe the humidity of the air with rapidity, and they generate heat. Although heat be produced by their union with water, yet, when mixed with ice in a certain manner, they generate a prodigious degree of cold. Acids change the purple and blue colours of vegetables to a red: they resist fermentation; and, lastly, they impress that peculiar sensation on the tongue called *sourness*, and which their name imports. But it is to be observed, that some are highly corrosive, inasmuch as not to be safely touched, unless largely diluted with water, or united with such substances as obtund or suppress their acidity. Mixed hastily with vinous spirits, they raise a violent ebullition and heat, accompanied with a copious discharge of noxious fumes: a part of the acid unites intimately with the vinous spirit into a new compound, void of acidity, called *dulcified spirit*.









It is observable, that the marine acid is much less disposed to this union with spirit of wine than either of the other two; nevertheless, many of the compound salts resulting from the combination of earthy and metallic bodies with this acid, are soluble in that spirit, while those with the other acids are not. All these acids effervesce strongly with alkaline salts both fixed and volatile, and form with them neutral salts; that is, such as discover no marks either of an acid or alkaline quality.

The nitrous and marine acids are obtained in the form of a thin liquor; the acid part being blended with a large proportion of water, without which it would be diffused into an incoercible vapour: the sulphuric stands in need of so much less water for its condensation as to assume commonly an oily consistence (whence it is called *oil of vitriol*), and in some circumstances even a solid one. Alkaline salts, and the soluble earths and metals, absorb from the acid liquors only the pure acid part: so that the water may now be evaporated by heat, and the compound salt left in a dry form.

From the coalition of the different acids with the three different alkalies, and with the several soluble earths and metallic bodies, result a variety of saline compounds; the principal of which shall be particularised in the sequel of this article.

The vitriolic acid, in its concentrated liquid state, is much more ponderous than the other two; it emits no visible vapour in the heat of the atmosphere, but imbibes moisture which increases its weight: the nitrous and marine emit copious corrosive fumes, the nitrous yellowish red, and the marine white ones. If bottles containing the three acids be stoppt with cork, the cork is found in a little time tinged black with the vitriolic, corroded into a yellow substance by the nitrous, and into a whitish one by the marine.

It is usually laid down as a character of one of the classes of earths, that the vitriolic acid precipitates them when they are previously dissolved in any other acid: it is obvious, that on the same principle this particular acid may be distinguished from all others. This character serves not only for the acid in its pure state, but likewise for all its combinations that are soluble in water. If a solution of any compound salt, whose acid is the vitriolic, be added to a solution of chalk in any other acid, the vitriolic acid will part from the substance with which it was before combined, and join itself to the chalk, forming therewith a compound; which, being no longer soluble in the liquor, renders

the whole milky for a time, and then gradually subsides.

This acid may be distinguished also, in compound salts, by another criterion not less strongly marked. If any salt containing it be mixed with powdered charcoal, and the mixture exposed in a close vessel to a moderately strong fire, the acid will unite with the directly inflammable part of the charcoal, and compose therewith a genuine sulphur. Common brimstone is no other than a combination of the vitriolic acid with a small proportion of inflammable matter. With any kind of inflammable matter which is not volatile in close vessels, as the coal of vegetables, of animals, or of bitumens, this acid composes always the same identical sulphur.

The nitrous acid also, with whatever kind of body it be combined, is both distinguished and extricated by means of any inflammable substance being brought to a state of ignition with it. If the subject be mixed with a little powdered charcoal and made red hot, a deflagration or fulmination ensues, that is, a bright flame with a hissing noise; and the inflammable matter and the acid being thus consumed or dissipated together, there remains only the substance which was before combined with the acid, and the small quantity of ashes afforded by the coal.

The properties of the nitrous acid deflagrating with inflammable substances, and of the vitriolic forming sulphur with them, serve not only as criteria of the respective acids in the various forms and disguises, but likewise for discovering inflammable matter in bodies, when its quantity is too small to be sensible in other trials.

All these acids will be more particularly examined when we come to treat of each of them apart. There are, however, a few other mineral acids which are of importance to be known: these are, *aqua regia*; *acid of borax*; *sparry acid*; and, lastly, *fixed air*, which has of late been called *aërial acid*, or *carbonic acid*.

*Aqua regia* has been generally prepared by a mixture of certain proportions of the nitrous and muriatic acids. It is of little avail in pharmacy whether we consider it as a distinct acid, or only as a modification of the muriatic. It has been found, that the muriatic acid when distilled with *manganese* (a peculiar fossil substance, shewing a remarkable attraction to phlogiston) suffers a change which renders it capable of dissolving gold and platina. Whether this change be produced by the acid acquiring a redundancy of pure air, or by its being deprived of phlogiston, it is not our business to decide. This experiment, however, renders it probable,

that the nitrous acid in the common aqua regia is only subservient to accomplishing the same change in the muriatic acid which is produced by distilling that acid with manganese.

As aqua regia has been only used in the nicer operations in chemistry, and in the art of assaying, we think it unnecessary to say more of it in this place.

The *acid of borax*, or *sedative salt of Homburg*, may be extracted from borax, a neutral salt whose base is mineral alkali. It has also been found native in the waters of several lakes in Tuscany. It is a light, crystallised, concrete salt; its taste is sensibly acid; it is difficultly soluble in water; but the solution changes blue vegetable colours to a red. With vitrescent earths it fuses into a white glass: it unites with the other alkalies too, but with these peculiarities it is unnecessary for us to interfere.

For the various uses to which these acids are put in veterinary medicine, see the several diseases requiring their application.

**ACONITE**, *Wolfs-bane*, a poisonous plant, of which Miller describes thirteen species. It is destructive to cattle if eaten. (See **ANTI-DOSE**.)

**ACOPUM**, or **Accorum**, a medicine used by the ancients, both externally as an ointment or charge, and internally, as an electuary. The acopum was in great reputation for horses, from the time of Theonnestus, as it cured a horse he loved exceedingly that was frozen almost stiff, while he carried his master from Pæonia into Italy, over the mountains, in a violent storm, which killed many horses of the army.

This preparation is as follows:

‘ Take of euphorbium two ounces, castoreum four ounces, adarces half a pound, bdellium three ounces, pepper one pound, fox-grease two ounces, oppoponax four ounces, lacerpitium three ounces, of ammoniacum half a pound, pigeons’ dung as much, galbanum two ounces, of nitrum five ounces, spuma nitri three ounces, labdanum one pound, of pyrethrum and bay-berries, of each three ounces, cardamums eight ounces, rue-seed half a pound, agnus castus four ounces, parley-seeds two ounces, dried roots of iris or flower-de-luce five ounces, hyssop and cariopobalsamum, of each one pound, oil of flower-de-luce, and oil of bays, of each one pound and an half, oil of spikenard three pounds, oleum cyprinum three pounds and an half; of the oldest oil olive that you can possibly get, six pounds, of pitch not smelling of the smoke, one pound eight ounces, turpentine one pound; melt all the liquid ingredients by themselves; beat the hard ingredients,

‘ and mix them together over a gentle fire; ‘ and when they are dissolved and thoroughly ‘ incorporated, strain the whole composition, ‘ and keep it for use.’

This is a very odd composition, but it is extremely hot and stimulating, and if it could be easily made, might be of service outwardly, applied after the manner of a charge, in paralytic numbnesses, in all chronic affections of the joints, sinews, &c. The ancients used it in all such cases, and likewise squirted a solution of it into the nose in violent colds, and in some disorders in the head. They also gave it as a confection inwardly, in cases of a malignant nature, dissolved in a cup of wine. But some of the ingredients, as the oil of spikenard and oleum cyprinum, are not now to be had, though these might be supplied by adding a sufficient quantity of spikenard in powder, and increasing the quantity of the oil of bays.

**ACORNS**, the fruit of the oak, and principally used in fattening hogs, for which they are very proper.

Every farmer collects his own, or tends his pigs upon them. Some care is, however, necessary to be taken when hogs are fed upon acorns, for otherwise they will be subject to a distemper called the garget. To prevent which, the best way is to moisten some peas or beans with water, and sprinkle over it some crude antimony in powder; if this be repeated every other day for a fortnight or three weeks, it will effectually preserve them from the disorder. Or if the acorns be collected and prepared in the following manner, they may be given to hogs without any danger.

Dig a hole in the ground in a warm place, large enough to contain several bushels of acorns; in this let the acorns be put, and well moistened with water, in which a handful or two of common salt has been dissolved: in a few days they will begin to heat and spire: observe them therefore attentively, and when they have made a shoot about three inches long, take them out of the hole, and spread them to dry on a barn floor, and in a day or two they will be fit to be given to the hogs. This matter must, however, be managed with care and caution: they must not have too many given at a time; at first twice a-day is often enough to feed them for a day or two; afterwards three times a-day. Nor should they, while they eat this food, be confined to a sty, but suffered to run at large; for if their liberty be too much abridged, they will never thrive well, or grow fat on acorns. It is no uncommon thing in Hertfordshire, with the management above directed, and the assistance of a little wash, and a few grains now









and then, for a farmer to kill several hogs in a season, which shall weigh from eight to ten score, and sometimes even more.

M. de Saunier recommends a decoction of acorns as an astringent glyster for horses affected with a lax or scouring.

ACOUSTIC MEDICINES, remedies applied for the cure of deafness.

ACRIMONY (from *acer*, *sharp*). This term is applicable to any substances that produce particular sensations from the action of that stimulus which they possess, and which we express by the different terms, sharpness, eagerness, tartness, acid, alkali, &c.; and it is also applicable to some states of the humours in an animal, as acrimony of the bile, and other secretions which are, by the laws of the animal economy, constantly thrown out of the machine, in order that the humours may be kept in a sound state; for, except when in a morbid state, they are free from all acrimony. When in a morbid state, we have different species of acrimony, which are judged of, and denominated from the effects they produce on the habit. Hence, we say, complaints of this nature originate from an acrimonious humour, *sui generis*.

ACTION, denotes the impulse of bodies on each other by pressure. If a body be urged by equal and contrary actions or pressures, it will remain at rest. But if one of these pressures be greater than its opposite, motion will ensue towards the parts least pressed.

It is to be observed, that the *actions* of bodies on each other, in a space that is carried uniformly forward, are the same as if the space were at rest; and any powers or motions that act upon all bodies, so as to produce equal velocities in them in the same, or in parallel right lines, have no effect on the mutual *actions*, or relative motions. Thus the motions of bodies aboard a ship, that is carried steadily and uniformly forward, are performed in the same manner as if the ship was at rest. The motion of the earth round its axis has no effect on the *actions* of bodies and agents at its surface, but so far as it is not uniform and rectilinear. In general, the actions of bodies upon each other, depend not upon their *absolute* but *relative* motion.

In the *actions* or functions of an *animal body*, which is here our immediate object of consideration, each part has an action peculiar to itself. They are divided into the *vital*, *animal*, and *natural*. 1. The *vital* are such as are essential to the subsistence of the individual; such are the motions of the heart and lungs, the nerv-

ous influence on the cerebrum, on which the motions of the heart and lungs depend; and the circulation of the blood and fluids in their proper vessels. *Pulsation* and *respiration* are the external signs of life. 2. The *natural* actions are such as are necessary to the continuance of the animal, yet not so immediately but that it may subsist some time under a suspension of them; as the digestion of the aliment, and its conversion into blood. 3. Under *animal actions* are comprehended those which constitute the senses of touch, taste, smell, vision, hearing, perception, memory, and voluntary motion; without all, or most of which, it is impossible for an animal to live.

Mr. ST. BEL observes, that although it may be impossible for us to compute the natural strength of the muscles, we may nevertheless investigate the mechanical causes which operate the translation or removal of animal bodies, observe their effects, and come to some result concerning the difference of speed in the progression of different animals.

This requires, first, a knowledge of the anatomy and mechanism of the animal economy; secondly, a knowledge of the laws of motion; by means of which we are enabled to calculate the causes and effects of the operations of which the animal is capable.

Since it is evident, that nature has calculated and combined all her productions, and has subjected herself in general to the established laws of mechanics; it is obvious, that we ought to apply the lights which proceed from the knowledge of these laws to the examination and illustration of her works. It is only in disputing, as it were, with her, in seeming to question her power, in boldly attempting to remove the veil under which she conceals herself, that we in a manner constrain her to explain herself upon an infinite variety of important points, on which ignorance alone has hitherto ventured to pronounce.

It is not an habit imperceptibly acquired, nor a vague routine, nor a practice unestablished on sure principles, that can ever give us satisfactory solutions of an infinity of problems, which nature presents daily to our attention; it is by the constancy of study and reflection only, that we can be enabled to establish new principles upon subjects which the light of science has never yet illumined.

No one is ignorant that the course of progression is not the same in all animals. How different, for example, is the gallop of a large dray-horse from that of a good race-horse? It is with difficulty that the former moves his body



to determine it into the pace required; he gathers the ground heavily under him at each step, and the translation of his bulk is but tardily effected. The latter, on the contrary, flies as an arrow from a bow, and scarcely imprints the ground with his shoe; he often runs over a space of four miles in less than eight minutes. These are, however, but individuals of one and the same class. The number of the parts which conspire to effect their respective progression is the same in each: but these parts differ in their bulk, their extent, and their direction; from whence result different degrees of power in the levers which they form. So that we are not to imagine that the mass or weight of the horse is the only cause of his slowness, which rather proceeds from the mechanical arrangement of the parts, whose relation and correspondence determine the extent of his motions.

The *extent of the action* of any part is the produce of its length and direction. The *force of the action* is rather the consequence of the direction of the muscles, than of their intrinsic power, which must unavoidably vary, being increased or diminished, in proportion as the muscles are more or less removed from the centre or axis of the parts which they are to move. It will be necessary to illustrate this principle. Let us then suppose the shoulder-blade of a horse to be long, and in a very oblique direction, so as to form with the humerus an angle of eighty degrees; then, the muscles which move the shoulder forward, backward, upward, and downward, being remote from the centre or axis of the motion, will produce the flexion and extension of this part more advantageously than if they were brought nearer that centre; so that if the shoulder inclines backward with forty degrees of obliquity, it must advance forty degrees to find the perpendicular. If, on the contrary, this part, when in a state of inaction, approaches nearer the perpendicular, and is in itself naturally shorter, the portion of the circle it describes will be less, whatever may be the intrinsic power of the muscles. The good or bad construction of the shoulder influences materially in progression, since it is the origin of the limb, and consequently its motion determines that of the inferior parts. It is therefore with good reason that a long and oblique shoulder is required in an horse for speed; since the longer and more oblique that part is, the further the arms of the lever will be extended, the more open will be the angles, and the greater the portion of the circle which it will describe.

To convey an idea of the consequences Mr. St. Bel draws from the dimensions of the famous horse ECLIPSE, he applies some mechanical principles to the action of the hock, that being a part whose function is of the greatest importance in the *progression* of the horse. All horsemen agree in the preference that is to be made in this part of the animal; they prefer that which is *wide* and *flat*, because it appears to denote strength, and the dissection of the part confirms this opinion.

The structure of the hock presents an angular spring, formed by the tibia and the calcaneum, whose power is increased or diminished in proportion to its shortness. At the union of the two branches of this spring is the origin of the fulcrum, which rests upon the ground. The power which extends these branches is the contraction of the flexor muscles; the weight of the body is a second power which compresses the spring; the resistance exists in effect in the extensor muscles, which yield at the moment of flexion, but in their turn repossess themselves of the power, by which they produce in the spring of the hock an extension equal to the compression it had sustained: for, by the nature of the spring, its extension must be always in the same direction with the compressing power, and with a force equal to the degree of compression. This may be easily perceived in an horse galloping at full speed. In a race-horse, for example, we see the hind legs placed obliquely forward under the body, and even beyond the centre of gravity; in this direction, finding themselves charged with the whole burthen, they make a sudden effort to disengage themselves from the weight which oppresses them; and from the repetition of these alternate flexions and extensions proceeds the celerity of the gallop. In horses, on the contrary, whose hind feet do not sufficiently approach the centre of gravity, and whose spring is perpendicularly compressed, we see that the extension still takes place, in the same direction, and in the same proportion. This is distinctly evident in the short gallop of the manege-horse. In a word, the force of action in the hock will increase in proportion with the prolongation of the hinder branch of the spring, formed by the calcaneum; and we must thence infer, that the wider the hock is, the better it will serve progression; provided that the remainder of the limb is in just, relative proportion.

This idea of the mechanism of the shoulder and the hock in the horse will discover the principles upon which Mr. St. Bel endeavoured to establish the advantage of a due proportion of

the parts. It will be readily perceived, that these principles must have for their object the length, breadth, and direction of the solid parts which compose the skeleton of the machine; whose symmetry and harmonious arrangement, favouring the power of the muscles, is the cause of the freedom and extent of the motions.

Though it is not possible to lay bare to our inspection the bony or muscular parts of the living animal, yet the eye, instructed by anatomical knowledge, is able to discern them, and to measure and compare them with sufficient exactness to be able to deduce some consequences concerning the *power* and *the extent of their action*. By this method the proportions of Eelipse were taken when living, and afterwards upon his skeleton, by Mr. St. Bel, for a continuation of whose remarks, see PROPORTION.

In describing the different effects of a concave, flat, or convex state of the hoof, as promoting or retarding the *actions of the horse*, the same writer observes, that the *leg* of a horse when *in action*, describes a portion of a circle, proportioned to the length and freedom of its motions. When the horse advances one of his legs, at the moment the foot touches the ground it describes an oblique line, inclining forward from the shoulder to the ground. In proportion as the body advances, this obliquity is lessened, until at length the leg attains a vertical direction, at which time the horse has completed *half his action*. All this time the leg has only been employed in bearing the weight of the body; but in continuing the action it begins to project or determine the body forward, which action it continues until it describes another oblique line, equal to the former, but in an opposite direction, inclining forward from the ground to the shoulder, and forming with the first line an angle more or less open; this is the whole extent of the action of the horse, and the foot, firmly fixed on the ground, does not quit its tread till the whole action is completed. This, however, can only be applied to a well formed foot, enjoying every advantage that may result from its structure. Let us now suppose a flat foot, that is to say, a foot, the cavity of which is from some cause filled up, or effaced. The points of rest on the ground at the moment of progression in such a foot will be far less firm than that of the concave foot, because when the leg, in projecting the body, shall have obtained but a certain degree of obliquity, it will not dare to hazard the whole extent of its action, lest the foot, which has not sufficient hold upon the ground, should slip back.

If we carry our thoughts now to the convex foot, it will be easy to conceive that the convex surface of the sole destroys entirely the solid bearing of the foot on the ground; such a foot is constantly in a state of vacillation, and would unavoidably slip back, before the leg could possibly attain its last degree of extension.

This may be reduced to demonstration by comparing the feet of all quadrupeds, which, however they may be diversified or adapted to other particular purposes, agree in some general principle, by which they effect their progression. They are all furnished with a heel, serving as a point of rest while standing, and the opposite side of the foot, or toe, is provided with a sharp angular point, or points, by affixing which to the ground they are able to command any degree of speed. Even man, when running, at each projection of his body inflects his toes to the ground, and by the firmness of that pressure obtains the last degree of purchase; as may be proved by attempting to run, at the same time keeping the toes from the ground. The cat kind, by means of the excessive sharpness of their claws, which they are able to fix into most substances, so as to ascend a tree and other perpendicular surfaces, are able to secure their footing with proportionate firmness. The dog, whose feet are partly of the same nature, but who is not intended for the same mode of life, is provided with claws less curved and sharp, but which enable him, upon surfaces more inclined, to tread with extreme firmness and tenacity, and by their pressure in the surface of the earth furnish him with a purchase, which enables him to display a surprising speed. The deer, also intended for speed, finds the same benefit in the double angle of his toe, which strikes into the ground, and establishes a most firm tread.

The same is to be observed of the horse and zebra, in their natural state; which animals, although they have not an angle visible without, like the others, and though the foot is guarded by a circular defence, yet tread with equal firmness by means of an angular edge. Let us compare in detail the feet of the horse and the dog; and it will appear that they are formed exactly upon the same principles as to progression. The ball of the foot in the dog, corresponds with the heel and frog of the horse, and the five points of the claws, standing in a semi-circle, correspond with the lower edge of the hoof, which may be considered as a succession of points. The former rests on the ball of the foot, as the latter on the heels and frog. In proportion as the body is advanced and the foot retires, the point of rest advances to the



toe in the horse, and to the central claw in the dog. When either animal is stretched to the extent of his limb, the points of the toe and claw are pressed into the ground, and from the purchase there obtained the body is projected. If we were to widen the point of the claw in the dog, by adding to it a small plate of iron, broader than its natural termination, there can be no doubt that the dog would be unable to tread with the same hold, or to extend his limbs to the term of their natural action.

In further illustration of these principles, we should also consider how much strength is lost by large draught horses, when drawing a heavy carriage upon an inclined road. Their feet, which are either flat or convex, slide back at every step before the leg has been able to complete *the whole compass of its action*. To render this more evident, Mr. St. Bel enters on a calculation which it will be more proper to notice when we consider the structure of the foot.

**ACTION** of the mouth, a phrase, in the manege, signifying the agitation of the tongue and mandible of a horse, or his champing upon the bit of the bridle, to keep his mouth fresh; whereby he emits a white ropy foam, which is looked upon as a sign of vigour, mettle, and health.

**ACULER** is used, in the manege, for the motion of a horse when, in working upon volts, he does not go far enough forward at every time or motion; so that his shoulders embrace or take in too little ground, and his croupe comes too near the centre of the volt. Horses are naturally inclined to this fault in making demi-volts.

**ADDER-STUNG**, is said of cattle when stung by adders, or bit by a hedge-hog; to remedy which, some use an ointment made of dragon's-blood, with a little barley meal and the white of an egg.

**ADDITAMENTUM** (from *addo*, to *add*), the same as *epiphysis*. A small bone joined to a larger, by means of a cartilage; any additional substance; also a future. The large epiphysis of the ulna in the horse is called *additamentum necatum*.

**ADDUCTOR**, A LEADER TO (from *adducere*, to *move* or *bring towards*). A name of several muscles, of which examples occur in the Anatomical plates.

**ADHESION** (from *ad* and *hæro*, to *cleave to*), a term used to denote the spontaneous union, or growing together, of two surfaces lying in contact; for instance, the lungs with the pleura. This is occasioned either by a *peculiar kind*, or *certain degree* of inflammation, and the coagu-

lable lymph of the blood forms the uniting medium, which, as Mr. Hunter has shewn, frequently elongates, and becomes vascular.

Adhesions are frequently hurtful by intercepting the functions of parts destined for motion, as in the bowels, &c. But adhesion is nevertheless a most important instrument in the hands of nature for the restoration of parts, and the preservation of their functions under accidental circumstances.

Mr. Hunter's treatise on the blood and inflammation should be consulted by every one desirous of an accurate knowledge of the nature and ends of this process in animal bodies.

The powers of adhesion are particularly strong in brutes; and the exposure of cavities, with all its consequences, is frequently prevented by the inflammation brought on by the actual cautery. (See **CAUTERY**.) In the horse a penetrating wound of a joint may be cured by this means. See **JOINT**.

**ADIPOSE ARTERIES**, branches from the phrenic arteries, which are spread on the fat that covers the kidneys.

**ADIPOSE MEMBRANE**. See **CELLULAR MEMBRANE**.

**ADIPOSE VEINS**. These spring from the emulgents, and go to the pinguious covering of the kidneys.

**ADIPOSE DUCTS**. The bags or ducts containing the fat. The word *adipose* is from the latin, *adeps*, fat.

**ADNATA, TUNICA** (from *adnascer*, to *grow to*). The outer coat of the eye, or that which makes the *white of the eye*. Five of the muscles which move the eye take their origin from the bottom of the orbit, and the sixth arises from the edge of it; they are all inserted by a tendinous expansion into the anterior part of the tunica sclerotica; which expansion gives the whiteness peculiar to the fore part of a man's eye. It lies between the *sclerotica* and *conjunctiva*. It is extremely sensible, and abounds with blood-vessels, which are very visible in inflammations. It covers so much of the eye as is called the white; and, being reflected all round, it lines the two eye-lids, and thus hinders anything from falling into the orbit. Where it covers the eye-lids, it is vascular and papillous. In passing over the orbit, it does not end at the cornea, but becomes transparent there, and is of different textures in different parts where it is spread. The *sclerotica* appears under it.

When a foreign body gets between the eye and the eye-lid, it is lodged in the villi: the best way to extricate it is, *to invert the eye-lid*,



and to introduce a probe, armed with lint and dipped in oil, which will extract it.

ADNATA, also signifies such parts of animal or vegetable bodies as are inseparable, as the hair, wool, fruits, horns; or else accidental, as fungus, mistletoe, and excrescences.

ADOR, a sort of corn (from  $\alpha$  neg. and  $\delta\alpha\rho\upsilon$ , a spear), so named from its being without the beard or spear: also called *spelta* and *zea*, SPELT CORN. Dioscorides mentions two kinds of it, the *monococcous* and the *dicoccous*, that is such as has only one grain or two in a husk.

ADSTRICTION (from *ad* and *stringo*, to bind together), either denotes the styptic quality of medicines, or the retention of the natural evacuations in an animal, in consequence of the rigidity of the excretory organs. See CONSTIPATION.

ÆGOLETHRON (from  $\alpha\iota\gamma\acute{\iota}$ , a goat, and  $\epsilon\lambda\theta\rho\epsilon\varsigma$ , destruction); a vegetable so named from its being thought poisonous to goats. Dioscorides, Pliny, and others, notice this, and speak of it as a tree, from the leaves of which bees gathered honey about Heraclea in Pontus, which honey was sometimes poisonous, and sometimes not. Tournefort says it is the *Chamerodendron*. See MEM. de l'ACAD. ROY. de SCIENCES, 1704.

ÆGYPTIACUM, MEL, called in the new college dispensatory, *oxymel of verdigrise*, is a solution of the latter ingredient in vinegar and honey. It has been usually, but improperly, called an ointment. See the article OXYMEL.

AFTERMATH, the second crop, or grafs which springs up after mowing, or the grafs cut after the corn. In the neighbourhood of London, the aftermath when made into hay, is of considerable value: but in making this crop, so as to render it wholesome for horses and cattle, great nicety is requisite; the nature of the aftermath-grafs being more soft, spongy, and porous, than grafs of the first growth. See HAY.

In the Midland counties, their management of aftergrafs is, in general, judicious. It is there suffered to get up to a full bite before it be broken: not turned in upon, as soon as the hay is off, nor suffered to stand until much of it be wasted.

AGARIC, of the OAK, called *fungus igniarius*. AGARICUS pedis equini facie, fungi arborei ad ellychnia. *Female agaric*, and, from its readiness to catch fire, *touch-wood*.

It grows in the form of a horse's hoof; externally it is of a dusky ash-colour, and internally of a dusky red; it is soft and tough. The best is said to grow on the larger branches of

oak trees; but that which is found on other trees is often as good.

It consists of four parts, which present themselves successively. 1st. The outward rind, which may be thrown away. 2d. The part immediately under this rind, which is the best of all, and is used to restrain hæmorrhages from wounds, and after amputations. It should be beat well with a hammer until it is soft and pliable, then slices of it of a proper size are to be applied upon the open blood-vessel, whose discharge it restrains, not from its restringency, but its texture and adhesive quality: on the first application it adheres pretty strongly, but about the end of two days it begins to separate and soon falls off. 3d. A part which adheres to the second, and which is an inferior sort, may be used in less important cases. The 4th, or last part, may be powdered, and then used for the same purposes as the second and third sorts. The best time for taking the fungous substance from the trees is in autumn, when the weather is fine, and after great heats.

As a styptic, this fungus possesses some properties useful to the veterinary practitioner, as it will frequently stop the bleeding of wounded vessels which cannot be conveniently taken up by ligature.

This *agaric* grows on different trees, chiefly on the ash; it is the *boletus igniarius*, of Linn. *Touch-wood*, or *boletus acaulis pulvinatus lævis*, poris tenuissimis. Linn.

AGE of a horse. This is easily known by his mouth, till he comes eight, after which the usual marks wear out. A horse, like many other brute animals, has his teeth divided into three ranks, viz. his fore-teeth, which are flat and smooth, his tushes, and his back-teeth. His back teeth, or jaw-teeth, are called his grinders, being those by which a horse chews and grinds his provender, and are twenty-four in number, twelve above, and twelve below: they are strong double teeth with sharp edges; but when a horse grows old, they wear much smoother.

The first that grows are his foal teeth, which begin to appear a few months after he is foaled: they are twelve in number, six above, and six below; and are easily distinguished from the teeth that come afterwards, by their smallness and whiteness, not unlike the fore teeth of a man.

When the colt is about two years and a half old, he casts the four middlemost of his foal teeth, viz. two above and two below; but some do not cast any of their foal teeth till they are near three years old. The new teeth are easily distinguished from the foal teeth, being much stronger, and always twice their size, and are

called the *INCISORS* or gatherers, being those by which a horse nips off the grass, when he is feeding abroad in the fields, or, in the house, gathers his hay from the rack. When a horse has got these four teeth complete, he is reckoned three years old.

When he is about three and a half, or in the spring before he is four years old, he casts out four more of his foal teeth, viz. two above, and two below, one on each side the nippers, or middle teeth: so that when you look into a horse's mouth, and see the two middle teeth full grown, and none of the foal teeth, except the common teeth, remaining, you may conclude he is four that year, about April or May. Some indeed are later colts, but that makes little alteration in the mouth.

The tushes appear near the same time with the four last-mentioned teeth, sometimes sooner than these, and sometimes not till after a horse is full four years old: they are curved like the tushes of other beasts, only in a young horse they have a sharp edge all round the top, and on both sides, the inside being somewhat grooved and flattish, inclined to a hollowness.

When a horse's tushes do not appear for some time after the foal teeth are cast, and the new ones come in their room, it is generally owing to the foal teeth having been pulled out before their time, by the breeders or other dealers in horses, to make a colt of three years old appear like one of four, that he may be the more saleable; for when any of the foal teeth have been pulled out, the others soon come in their places; but the tushes having none that go before them, can never make their appearance till their proper time, viz. when a horse is about four, or coming four; and therefore one of the surest marks to know a four-years-old horse, is by his tushes, which are then very small, and sharp on the top and edges.

When a horse comes five, or rather in the spring before he is five, the corner teeth begin to appear, and at first but just equal with the gums, being filled with flesh in the middle. The tushes are also by this time grown to a more distinct size, though not very large: they likewise continue rough and sharp on the top and edges. But the corner teeth are now most to be remarked; they differ from the middle teeth in being more fleshy on the inside, and the gums generally look rawish upon their first shooting out, whereas the others do not appear discoloured. The middle teeth arrive at their full growth in less than three weeks, but the corner teeth grow leisurely, and are seldom much above the gums till a horse is full live:

they differ also from the other fore teeth in this, that they somewhat resemble a shell; and thence are called the shell teeth, because they environ the flesh in the middle half way round; and as they grow, the flesh within disappears, leaving a distinct hollowness and opennels on the inside. When a horse is full five, these teeth are generally about the thickness of a crown-piece above the gums. From five to five and a half they will grow about a quarter of an inch high, or more; and when a horse is full six, they will be near half an inch, and in some large horses a full half-inch, above the gums.

The corner teeth in the upper jaw fall out before those in the under, so that the upper corner teeth are seen before those below; on the contrary the tushes in the under gums come out before those in the upper.

When a horse is full six years old, the hollowness on the inside begins visibly to fill up, and that which was at first fleshy grows into a brownish spot, not unlike the eye of a dried garden bean, and continues so till he is seven; with this difference only, that the tooth is more filled up, and the mark, or spot, becomes faint, and of a lighter colour. At eight the mark in most horses is quite worn out, though some retain the vestiges of it a long time; and those who have not had a good deal of experience, may sometimes be deceived by taking a horse of nine or ten years old for one of eight. It is at this time only, when a horse is past mark, that one can easily err in knowing the age of a horse; for what practices are used to make a very young horse or colt appear older than he is, by pulling out the foal teeth before their time, may be discovered by feeling along the edges where the tushes grow, for they may be felt in the gums before the corner teeth are put forth; whereas, if the corner teeth come in some months before the tushes rise in the gums, we may reasonably suspect that the foal teeth have been pulled out at three years old.

It will, perhaps, be needless to mention the tricks that are used to make a false mark in a horse's mouth, by hollowing the tooth with a graver, and burning a mark with a small hot iron; because those who are acquainted with the true marks, will easily discover the cheat by the size and colour of the teeth, by the roundness and bluntness of the tushes, by the colour of the false mark, which is generally blacker, and more impressed than the true mark, and by many other visible tokens, which denote the advanced age of a horse.

After the horse has passed his eighth year, and sometimes at seven, nothing certain can be



known by the mouth. It must, however, be remembered, that some horses have but indifferent mouths when they are young, and soon lose their mark; others have their mouths good for a long time, their teeth being white, even, and regular, till they are sixteen years old and upwards, together with many other marks of freshness and vigour; but when a horse comes to be very old, it may be discovered by several indications, the constant attendants of age, viz. his gums wear away insensibly, leaving his teeth long and naked at their roots: the teeth also grow yellow, and sometimes brownish. The bars of the mouth, which in a young horse are always fleshy, and form so many distinct ridges, are, in an old horse, lean, dry, and smooth, with little or no rising. The eye-pits in a young horse (except those come of old stallions) are generally filled up with flesh, look plump and smooth; whereas in an old horse, they are sunk and hollow, and make look ghastly, and with a melancholy aspect. There are also other marks which discover a horse to be very old, viz. grey horses turn white, and many of them all over flea-bitten, except their joints. This, however, happens sometimes later, and sometimes sooner, according to the variety of colour and constitution. Black horses are apt to grow grey over their eye-brows, and very often over a good part of their face, especially those who have a star or blaze fringed round with grey when they are young. All horses, when very old, sink more or less in their backs, and some horses, that are naturally long backed, grow so hollow with age, that it is scarce possible to fit them with a saddle. Of this kind are several Spanish and Barbary horses, and many of the Danish and Flanders breed. The joints also grow stiff with old age, and their knees and hocks bend so, that they are apt to trip and stumble upon the least descent, though the way be smooth, and no ways rugged. After which they can be of little use to the owner.

MR. RICHARD LAWRENCE, veterinary surgeon at Birmingham, and author of an excellent and splendid work in 4to, entitled, "*An Enquiry into the Structure and animal Economy of the Horse*," has given a plate, which very well illustrates the progressive changes that take place in the appearance of the teeth at different ages. See Pl. I. of this volume, where some of these are accompanied with delineations of the state of the teeth by Mr. Taplin.

AGE of neat cattle. The age of the ox, cow, and bull, is known by the teeth and horns. At the end of ten months they shed their first fore

teeth, which are replaced by others, larger, but not so white; and in three years all the incisor teeth are renewed. These teeth are at first equal, long, and pretty white; but as the creatures advance in years, they wear, become unequal, and black. They also shed their horns at the end of three years; and these also are replaced by other horns, which, like the second teeth, continue. The manner of the growth of these horns is not uniform, nor the shooting of them equal. In the first year, that is the fourth year of the creature's age, two small pointed horns make their appearance, neatly formed, smooth, and towards the head terminated by a kind of button. The following year this button moves from the head, being impelled by a horny cylinder, which lengthening in the same manner, is also terminated by another button, and so on: for the horns continue growing as long as the creature lives. These buttons become annular joints, which are easily distinguished in the horn, and by which the age of the creature may be easily known; counting three years for the point of the horn, and one for each of the joints.

AGE of sheep. These animals in their second year have two broad teeth; in their third year they have four broad teeth before; in their fourth year, six broad teeth; and in their fifth year, eight broad teeth. After which none can tell how old a sheep is while their teeth remain, except by being worn down. *Ellis on Sheep.*

At the end of one year, rams, sheep, and wethers, lose the two fore teeth of the lower jaw; and they are known to want the incisive teeth in the upper jaw. At eighteen months the two teeth joining to the former, also fall out; and at three years, being all replaced, they are even and pretty white. But as the creature advances in age, they become loose, blunt, and afterwards black. The age of the ram, and all horned sheep, may also be known by their horns, which shew themselves in their very first year, and often at the birth, and continue to grow a ring annually to the last period of the creature's life. *Buffon's Histoire Naturelle, tom. V.*

AGE of goats. The age of goats is known by the same tokens as those of the sheep, viz. by their teeth, and the annular rings on their horns.

AGROSTIS CORNUCOPIA, a new American grass, introduced into England lately. It was first introduced into Georgia, where it continues to flourish; and is found better than any other grass for running amongst the rocks, and standing drought; but its chief excellence



is, that not only cattle, horses, and sheep, fatten upon it, but every species of poultry are fond of it. It is greatly favourable for making of grass plots, being of a fine texture, and a beautiful verdure in this country throughout the year. The following experiments were made by Mr. Frazer at Chelsea. A few seeds sown Nov. 20, 1788, continued dormant all the winter. The plants made their appearance in the beginning of March, and flowered early in September, when they measured from three to four feet. Each root produced one hundred stems: each stem sending forth branches, some from four to six, others as far as ten or twelve, bearing panicles for seed; each panicle from twelve to eighteen inches long. This shews the multiplication to be infinite. A small quantity was sown March 15, 1789. Seedlings transplanted, by dividing the roots, on the 22d of May; began unexpectedly to flower in September, and completed their flowers nearly as early as those sown in November preceding. On the 9th of September, measured two feet five inches. Part of the bed, cut close to the ground on the 15th of August, measured, on the 9th of September, from twelve to sixteen inches; and on the 10th of October twenty-two inches. The sward much thicker than what had not been cut down. It then began to flower, from 100 to 200 panicles on each root.

AID, in the manege, the help or assistance by which the horseman contributes towards the motion or action required of the horse, by a discreet use of the bridle, cavesson, spur, pincion, rod, calf of the leg, and voice; thus we say,

Such a horse knows his aids, takes his aids with vigour, &c. The aids are made use of, to avoid the correction or chastisement sometimes necessary in breaking or managing a horse. The same aids, given in a different manner, become corrections. You can never ride well, unless you be very attentive and active, without precipitancy, in not losing or missing your times, and in giving your aids seasonably; for, without that, you will accustom your horse to dose upon it. If your horse does not obey the aids of the calves of your legs, help him with the spur, and give him a prick or two. This sorrel-horse has his aids very nice; that is, he takes them with a great deal of facility and vigour. This gentleman gives his aids very finely; that is, he animates and rouses up the horse seasonably, and helps him at just turns, in order to make him mark his times or motions justly. This horse knows the aids; he obeys or answers the aids; he takes them finely. You do not give the aids

of the cavesson with discretion; you make a correction of them, which will baulk your horse. See the article CORRECTIONS.

The aids used to make a horse go in airs are very different from those required in going upon the ground.

The inner-heel, inner-leg, and inner-rein, all called *inner-aids*. The outer-heel, outer-leg, &c. are *outer-aids*. See the article IN.

AIR, the elastic fluid which we breathe, and by which animal life is universally supported. Every one is aware of the necessity of its being in a pure state, and of a proper temperature, otherwise the health of the human body cannot be preserved; and that an equal attention to this in the management of horses and cattle is no less indispensable, must be obvious to every rational mind.

Unfortunately, though the stalls for the latter are sufficiently ventilated, this is far from being the case with our stables; respecting the state of which we have the following excellent remarks by Mr. Clark of Edinburgh:

Young horses, he says, generally are accustomed to live and breathe in a pure open air till they come of age, and are fit for labour; it is then found convenient to *house* them. This produces a considerable *change in their bodies*, and makes them liable to be greatly affected by the temperature of the *air* which surrounds them, and in which they breathe.

That the generality of stables are kept *too close* and *hot*, requires no demonstration, as every one who goes into them (even when the weather is pretty cool) must have discovered this from his own feelings; and, in the summer season, the heat within them is increased to a very great degree. What renders this still worse, it frequently happens, that from the situation and structure of many stables, no opening can be made to allow a sufficient quantity of *fresh air* so as to enable horses confined in them to breathe with any tolerable degree of freedom. The door is the only entrance for air, and that can only happen occasionally when it is opened. It is true, the intercourse that must unavoidably take place through the day in going out and in, renders such stables tolerably fresh aired; yet in the mornings, when the door has been shut up for some hours through the night, and especially in summer, the heat is intolerable, and the air so foul, that a man can hardly breathe in it, whilst, at the same time, the sharpness of the salts, arising from the horses' urine, &c. attacks his nose and eyes, and occasions a copious discharge of tears. How is it possible, we may ask, that an animal can

can subsist, much less prove vigorous and healthy, whilst breathing such a contaminated atmosphere?

Many of the hovels at present used as stables do not even deserve the name; and it is surprising that, considering the value and usefulness of horses, so little attention is paid to their health in this respect: for surely there can be nothing more hurtful than keeping a number of them (perhaps 30 or 40) shut up in a close warm stable, where they must constantly breathe *a hot foul air*, which, at the same time, is strongly impregnated *with the putrid steams of their own dung, wind, and urine*, beside the exhalations that arise from their bodies, which, in this case, are kept in a constant strong perspiration, by the great heat of the air which surrounds them; and, to add to all this, they are perhaps wrapped tight up in body-cloths. How can it be expected that a horse, who has passed the night in this situation, should be active and vigorous to perform his day's work? Will he not rather be faint, languid, and dull, his whole system as it were being unhinged, and in a relaxed state. Let any man, who is an advocate for this treatment of horses, try the experiment on himself; let him sleep in a heated close room, covered up with clothes, sweat it out for the night, and try the condition he will be in next day for any employment whatever.

Although the description here given of the situation of horses in some stables through the night, may appear exaggerated, it is, however, a true one; and the same observation will hold with respect to those stables that are of smaller dimensions, even although they should contain fewer horses. If, at the same time, the stable is made so close as to exclude the admission of *fresh air*, it is well known to be a common practice to shut up every crevice that would admit the least quantity of air. The very threshold of the door is choked up with dung; and even the key-hole is filled up with straw.

We know, from experience, that when a number of people are met together in a close room, the air within it becomes moist and hot, which renders breathing difficult; and if continued in for a length of time, this uneasy sensation would be increased. In churches, or crowded assemblies lighted with candles, the effects of a heated foul air is evident to the sight, from the lights burning dim and very faintly; and although the loftiness of the roofs in such places contributes to render it less perceptible to those who are on the lower or ground floor (as the heated foul air always ascends), yet to such people as are in the higher parts or galleries, the oppression it occasions in breath-

ing is great, the perspiration becomes profuse, and their thirst excessive. The bad effects of breathing long in a heated foul-air are too well known by those whose occupations in life have rendered it necessary, and whose vigour of constitution has abated in proportion to this exposure.

The lowness of the roof in the generality of stables, renders them unwholesome from this circumstance alone; the horses' heads being too near the stable roof, are under the necessity of breathing the heated foul air, which is always uppermost, constantly. During the time they are confined in the stable, especially through the night, when the doors, &c. are shut up, it is still worse in the warm months of summer. A heated foul air is noxious to animal life in general. How then can it be expected that horses should thrive in it? At the same time, can there be any thing more inconsistent than keeping horses warm to an excess in the house by the use of body-cloths, in a constant state of strong perspiration, and stripping them naked the moment they are to go abroad in all weathers? The constitution of a horse, strong as it is, cannot withstand such irregularities: it must, and indeed does, too often fall a sacrifice to this manner of treatment. The sudden and frequent transitions which horses undergo, almost every day, from being surrounded with, and breathing, a hot foul air through the night, and suddenly exposed to a *sharp, piercing, cold air*, and *vice versa*, from a cold to a hot, were there no other causes, are sufficient of themselves to produce a number of acute diseases. It is to be observed, that great heat and profuse perspiration dissipates the watery parts of the blood, and renders it too thick for circulation; and from that cause alone many diseases proceed. The constant inspiring of a hot foul air does not expand the lungs sufficiently, so as to promote the circulation of the blood through them; hence it is accumulated, and proves another source of disease in that organ. It likewise renders the horse liable to fever, faintness, languor, frequent sickness, and loss of appetite. It exposes him to all those external complaints which arise from obstructed perspiration, as rheumatism, tumors in the glands, scabs, lumps, scales on the skin, staring of the hair, &c. But the danger is still greater when the perspirable matter that should be carried off in the ordinary course is thrown upon some of the internal viscera, as the lungs, intestines, brain, pleura, &c. From the first of these proceed coughs, inflammations of the lungs, consumptions, &c. From an affection of the intestines proceed obstructions in the bowels, and diar-



rhœa, or *scouring*, as it is called, in horses. When it affects the brain, it produces vertigo, or staggers, apoplexy, epilepsy, &c. And when on the chest, it is attended with the most acute pains or stitches; symptoms which nearly resemble those of the gripes or colic. These complaints, if not speedily relieved, generally prove fatal in one way or other.

The heated foul air which generally prevails in such stables as are kept too close, is always accompanied with *dampness* or *moisture*. This is occasioned by their being made so close, that no fresh air can be admitted into them, but what passes in accidentally. Hence the moisture from the horses' perspiration and breath (and which may be increased from a low or damp situation) gathers, or is collected, in large drops on the roof, walls, and glass windows, and runs down in small streams. At the same time, the stable is filled with a hot, damp, and moist air, which is not only extremely pernicious to the health of these animals, but destructive to their furniture of every kind.

It would be needless to enter here into an enquiry concerning the properties of air, as every one, from his own experience, must have observed, at some time or other, the great difference arising from his breathing in a foul or in a pure air. It will be sufficient to observe, that air is the chief instrument of health, and principle of life, without which no animal can subsist; and that when its purity is destroyed by respiration, the admission of a fresh supply from without is indispensably necessary to health, and even to existence. Besides, particular situations and seasons often alter the qualities of the air, and render it more or less unfavourable to animal life. Nature, accordingly, makes use of all possible ways to preserve the air in a wholesome state; for it is thinned and purified by heat, and kept in continual motion by the winds.

Although the air is by such means often preserved in a wholesome state, yet, as has been before observed, particular situations and seasons often alter its qualities, so as to render it more or less hurtful. Its dryness produces one species of diseases; its moisture, another; its heat or its cold, others; and so on. It is well known, that no animal can exist long in the same individual quantity of air.

Thus, it is computed that a gallon of air is rendered unfit for respiration by passing in and out of the lungs of a man in one minute; consequently, a hoghead of air would not supply him one hour; nor, indeed, could he live in it one third of that time. Hence, therefore, we may learn, that, without a continual supply of

fresh air, the lungs cannot perform their office. This will appear still more necessary, when it is considered, that the lungs are known to produce an important change on the blood which passes through them, a change extremely essential to life and health.

Dr. Hales, to whom the world is much indebted for his curious and useful experiments on air, tells us, that he could not live half a minute without uneasiness in seventy-four cubical inches of air, and not one minute in the same quantity, without danger of suffocation. Modern chemistry has made still more important discoveries with regard to oxygen.

If the quantity of air above mentioned is rendered unfit for respiration by a man's breathing in it for so short a time, we may conclude that a much greater quantity of air would be rendered unfit for respiration in the same time by a horse, whose lungs are considerably larger, and of a more extensive surface.

The *effluvia* from animal bodies likewise impart noxious qualities to the air. Three thousand men, living within the compass of one acre of ground, would make an atmosphere of their own steams seventy feet high, which would soon become pestilential, if it were not dispersed by the winds. The air of prisons, for this reason, produces mortal fevers, and pestilential diseases.

*Moist air* relaxes all animal fibres. Such diseases, therefore, as proceed from laxity of fibres, must be the common diseases, both of moist seasons and moist situations. Dry air, by producing opposite effects, produces opposite diseases.

*Cold air*, by bracing the fibres, and giving them a stimulus, produces that strength and activity of which we are so sensible in frosty weather. *Hot air*, likewise, relaxes the fibres, so as to occasion that faintness and debility so often experienced in hot weather.

Those stables which contain a great number of horses are attended with other disadvantages, beside those already mentioned, especially to tired or fatigued horses, from the great intercourse which must unavoidably happen in people going out and in, especially in public stables. Hence those horses that are shy to lie down, or are easily disturbed, will not rest themselves in that horizontal posture, which is of great consequence for keeping their legs fine and clean, as it forwards the circulation of the blood, &c. in the vessels, and prevents swelling and gourdiness of the legs and heels, which are generally the forerunners of ulcers, scabs, grease, &c. Rest, to horses that are tired and fatigued, becomes absolutely necessary, in order to recruit



and refresh nature. We know how agreeable and necessary it is to ourselves. Horses are susceptible of the same sensations: therefore, every opportunity of resting and stretching their legs should be given them.

Large crowded stables contribute greatly to communicate contagious or infectious diseases. A great number of horses breathing in one place contaminates the air; and if it has not a free current, it soon becomes unwholesome, and, like the air of gaols, it contracts a malignant quality, which produces fevers in those horses who stand in them; and, on changing them to other stables, they likewise communicate the infection to others. Hence it has been remarked, in those epidemical diseases amongst horses which have appeared in Britain, that it raged with most violence in those stables where a great number of horses were confined together in one large stable, whilst its effects in small well-aired stables was more mild and less destructive.

To enumerate all the disadvantages which arise to horses from their breathing a hot, foul, moist air, in close stables, would take up too much of the reader's time, or perhaps weary his patience, as the impropriety of this treatment to horses must be obvious to every one who allows himself to reflect coolly upon the subject, and to apply these reflections to what he has experienced from his own feelings in the like situations. Independent, however, of the objections already mentioned, such a state of the air enervates the whole system, and, of course, renders horses unfit for the laborious exercises required of them.

On the other hand, when the air is too cold in a stable, this is likewise hurtful to horses, more especially after labour or exercise, or when they are kept standing fixed to one place, or where the cold air is directed upon them in a current or stream from any door or window. A current of cold air is more noxious to animals that stand in it but for a short time, than heat. The natural qualities of the former is one of the principal causes of the distempers it produces; for its coldness checks perspiration, by contracting the pores of the skin.

The earl of Pembroke, in his Military Equitation, tells us, that the Arabians keep their horses, as much as possible, in the open air.

"Every day (says he), from morning to night, all the Arabian horses stand saddled at the tent doors; and, as the Arabians live in tents, these tents serve them likewise for stables."

The method of managing horses approaches, as near as it is possible, to the natural or wild

state, and cannot fail of being attended with salutary effects to the constitution of this useful animal: and, although this practice cannot be adopted or recommended in our cold and changeable climate, yet the inference is very obvious, and cannot fail of shewing the propriety and usefulness of keeping our horses in well-aired ventilated stables. See *STABLE*.

*AIR*, in the manege, is a cadence and liberty of motion, accommodated to the natural disposition of a horse, which makes him work in the manege, and rise with obedience, measure, and justness of time. Some riding-masters take the word air in a more confined sense, as signifying only a manege that is higher, slower, and more artful and designed than the *terra a terra*; whereas others allow it a more extensive signification, so as to include a *terra a terra*; for if a horse maneges well in a *terra a terra*, they say the horseman has happily hit upon the air of the horse. In general, the walk, trot, and gallop, are not accounted airs, and yet some good riding-masters would by air understand the motion of a horse's legs upon a gallop. For instance, they say, such a horse has not the natural air; that is, in galloping he bends his fore legs too little. You should give or form your horse to an air, for he has no natural air, and since his haunches are very good, he is capable of the manege, if you do but learn him an air.

High or raised airs are the motions of a horse that rises higher than *terra a terra*, and works at curvets, balotades, croupades, and caprioles. In regard that a horse has the beginning or first steps of raised airs, and of himself affects a high manege, you ought to use this disposition discreetly, that he may not be disheartened, or balked; for your high airs make a horse angry, when he is too much put to it, and you ought to have suppled his shoulders very well before you put him to leap. See *PESATE* and *LEAPING*.

*AIRING*. See *EXERCISE*.

*ALÆ* (from *ala* a wing), a term used in anatomy to describe certain external parts of an animal which exist in pairs, and are thin and moveable. In this sense the nostrils of the horse are called *alæ narium*.

*ALBUGINEA TUNICA*, the inner proper coat of the testicle in male animals; so called from its shining white colour. It is strong, thick, smooth on the outer, and rough and uneven on the inner surface. Into the upper part of this coat pass the blood-vessels, nerves, and lymphatics, which branch into the substance of the testicle.

The distension of this coat is the cause of the pain in an inflammation of the testicle.

**ALBUGINEA** is also used for the **ADNATA**, which see.

**ALBUGO**, the name given to that pearl-coloured opaque speck, left on the eyes of horses and other animals, after long-continued inflammation. The names of **FILM**, **HAW**, &c. have been given to this disease, which is apt to extend over the whole of the cornea, occasioning total blindness. In the human subject it is often removed by the daily application of sharp powders, such as levigated glass, calomel, &c. and the same means will doubtless succeed with brutes; observing this precaution, however, only to use them after the inflammation has been subdued by other means.

**ALCOHOL**, an Arabic term, chiefly understood to denote the *purest spirit of wine*, raised or rectified, by repeated distillations, to its utmost subtilty and perfection. It is the most complete production of vegetable fermentation; and when brought to its highest degree of perfection, is the lightest fluid next to æther; perfectly transparent, very thin, most simple, totally inflammable, without producing any smoke, or diffusing any disagreeable scent while it is burning. It is exceedingly volatile, without leaving any *feces*: absolutely immutable in distillation, extremely expandible by heat, very easily disposed to ebullition by fire, of a very pleasant smell, and a particular grateful taste. All the humours of an animal body that we are acquainted with, it coagulates in an instant, excepting the pure water and urine; whilst it hardens all the solid parts, and thus preserves both from putrefaction, or spontaneous colliquation. It preserves the bodies of insects, fish, birds, and other animals that are put into it, from corruption, or alteration, if closely stopped. With water, vinegar, any acid liquors, oils, and pure volatile alkaline salts, it suffers itself to be mixed, and that nearly of an equal mixture; gummy and resinous substances it dissolves. So that we are acquainted with no liquid, produced either by nature or by the art of chemistry, that is capable of being united with more bodies than *alcohol*; but in a particular manner it proves an excellent vehicle for the essential oil or *spiritus rector* of vegetables, which, by uniting with it, may be extracted from its proper body, retained, and applied to medicinal and other uses. See **AROMATICIS**.

Since there are various, and sometimes very inviting occasions, in which medical persons stand in need of the true and purest *alcohol*, the least remainder of water rendering the operation unsuccessful, it is absolutely necessary we should have some marks by which we may be

able to distinguish whether our *alcohol* be pure or not. The principal of these are, 1. If the supposed *alcohol* contains any oil dissolved in it, and so equally distributed through it, that it is no ways perceptible; then upon the pouring of water into it, the mixture will grow white, and the oil will separate from the *alcohol*. 2. If any thing of an acid lies concealed in *alcohol*, a little of it mixed with the alkaline spirit of sal ammoniac, will discover the acid by an effervescence; for otherwise there would be only a simple coagulation. 3. If there be any thing of an alkali intermixed, it will appear by the effervescence excited by the effusion of an acid. As for other salts, they are seldom found in it. 4. But it is a matter of greater difficulty to discover whether there be any water intermixed with it; and therefore chemists have contrived certain methods by which this may also be determined: the best of them is this. Take a chemical vial with a long narrow neck, the bulb of which will hold four or six ounces of *alcohol*. Fill this two-thirds full with the *alcohol* you intend to examine, into which throw a dram of the purest and driest salt of tartar, coming very hot out of the fire; then mix them by shaking them together, and set them over the fire till the *alcohol* be just ready to boil. Being thus shaken and heated, if the salt of tartar remain perfectly dry, without the least sign of moisture, we are sure that there is no water in this *alcohol*.

The internal use of *alcohol* is highly stimulating to the animal frame. This, however, and *fermented spirits* in general, are of good service externally applied, in many cases. Thus spirit of wine, especially camphorated, is very good to resolve inflammations.

Pure *alcohol*, likewise, is the best of styptics. According to Juncker, it is a combination of the acetous acid, phlogiston, and water; but the ablest chemists are not yet agreed as to the constituent principles of this fluid.

**ALE**, a well-known fermented malt liquor, occasionally given, and sometimes not improperly, to horses, cows, &c. in cases where a cordial remedy is required. To the former it serves as a support on unusually long journeys or extraordinary fatigue; to the latter it is often given with a mixture of carminative powders, such as elccampanc, &c. in which form it is called a **DRINK** or **DRENCH**.

**ALEXIPHARMICS**, a name given to medicines of sudorific and diaphoretic qualities, on the supposition that these have a power of preserving an animal body against the effects of poison. The term is of Greek origin, from *αλεξω*, to repel, and *φάρμακον*, to poison.



**ALIFORM PROCESS**, in anatomy, any projecting process of bone which is in the form of a wing.

**ALIMENT**, the food of animals both solid and liquid, without which, adapted to their different organs, both in quantity and quality, they either cannot exist at all, or in a very sickly and incapable state. Nature directs every animal, instinctively, to choose such substances for food as are best adapted to its health and support; but as some are withdrawn from their natural condition for the convenience of man, and, in their domesticated state, are fed on artificial productions not of their own choice, it becomes a matter of serious importance to the owners of cattle, horses, &c. to make themselves acquainted with their nature and habits, and also with the qualities of those substances which are usually designed as food for them; since there is no doubt, but errors in the choice of the latter must be as fruitful a source of diseases in them as in the human subject.

By *aliment*, some understand only the *nutritious part* of the food, but this is a nice and useless distinction. See **FOOD**.

Mr. TAPLIN uses the word *aliment* in both senses. He says, "the aliment, after sufficient mastication in the act of chewing, is passed to the stomach, where it undergoes a regular fermentation (in general termed *digestion*), producing a certain quantum of *chyle*, in proportion to the *nutritive property* of the aliment so retained: this chyle, in its process, becomes wonderfully subservient to all the purposes of life and support, in its general contribution to the source of circulation, and the various secretions; while the grosser parts (from which the nutritious property is extracted in their progress through the stomach and intestinal canal) are thrown off from the body by excrementitious evacuations.

"Should the body be permitted to receive, and continue to accumulate in the frame, more **ALIMENT** than can be absorbed into the circulation, and carried off by the different emunctories in a *certain portion of time*; over-repletion, disquietude, and ultimately **DISEASE**, acute or chronic, must be the inevitable consequence."

**ALIMENTARY CANAL**, otherwise called the *PRIMÆ VIÆ* or first passages, in anatomy; the whole intestinal course by which the food passes, from its inlet to its outlet. The superior part is calculated to receive and digest the aliment; the middle to seern and convey to the blood its nutritious particles (see **LACTEALS**); and the terminating portion to expel what is no longer capable of benefiting the animal.

**ALKALI**, a chemical term used to denote

*the fixed salts of vegetables*. There are different kinds of alkali which we shall here describe.

When vegetable charcoal has been burnt, there remains a quantity of ashes or cinders of a blackish grey or white colour: these, when boiled or infused in water, communicate to it a pungent saline quality; the salt thus held in solution may, by evaporation, be reduced to a concrete state: this saline matter, however, is generally found to be mixed with ferruginous, earthy, and other impurities, and likewise with a number of neutral salts of different kinds. In this mixed condition it is the substance well known by the name of *potash*. This salt, or rather compound of different salts, is procured by burning large quantities of wood of any kind; and this process is called *incineration*: the predominating salt, however, is alkaline; and as the neutral salts are obtained to better advantage by other means, they are generally neglected in the purification of potashes. Potash, then, freed from its impurities, and separated from the other salts by processes to be hereafter mentioned, is now *the fixed vegetable Alkali*.

Alkalies in general are distinguished by a pungent taste, the very reverse of that of sourness; by their destroying the acidity of every four liquor; and by their changing the blue and red colours of vegetables to a green: they attract more or less the moisture of the air, and some of them deliquesce. The fixed alkalies, which we shall at present consider more particularly, are fusible by a gentle heat: by a greater degree of heat they are dissipated; their fixity, therefore, is only relative to the other kind of alkalies, *viz.* the volatile: they dissolve and form glasses with earths: and, lastly, when joined with acids to the point of saturation, they form what are called *neutral salts*.

These characters will afford some necessary and preliminary knowledge of these substances in general; and we shall afterwards find that they are sufficient to distinguish them from all other saline bodies: it is necessary, however, to examine them more minutely, for our analysis has not yet reached so far as to present them in their simplest state. Previous to the discoveries of Dr. Black, the vegetable fixed alkali (which we at present speak of particularly), when separated from the foreign matters with which it is mixed in the ashes, was considered to be in its purest state: we shall afterwards find that it is still a compound body, and is really a neutral salt, compounded of pure alkali, and fixed air or the carbonic acid. We presume, then, that the particular history of its chemical and medicinal properties will be better understood when those



processes are explained by which it is brought to its most pure and simple state. We shall only therefore observe for the present, that fixed vegetable alkali, not only in its pure state, but also when neutralised by aerial acid, seems always to be one and the same thing, from whatever vegetable it has been produced. Those of some sea-plants must, however, be excepted: the saline matter obtained from these last is, like the former, in a mixed and impure state; it differs, however, from potash, in containing an alkali of somewhat different properties. The cinder of sea-plants containing this alkali is called *soda*, or *fossil alkali*.

Soda, then, as we have just now hinted, is produced by the incineration of the kali and other sea-plants: and from this impure and mixed mass of cinder is obtained the marine, mineral, or muriatic alkali, or *natron*, as it is now denominated by the London College Dispensatory. This alkali has acquired these names, because it is the base of the common marine or sea-salt: it differs from the vegetable alkali in being more easily crystallisable; when dried, it does not like the former attract humidity sufficient to form a liquid; it is somewhat less pungent to the taste, and, according to Bergman, has less attraction for acids than the vegetable alkali.

It is, however, to be observed, that this alkali, when deprived of fixed air, that is to say, when brought to its purest state, can scarcely, if at all, be distinguished from the vegetable alkali; and indeed the true distinction can only be formed from their combinations, each of them affording with the same acid very different neutral salts. It belonged to this place to mention some of the characters of alkalies in general, and also some of those marks by which the vegetable and mineral alkalies are distinguished from each other: but for a more particular history of their chemical and medicinal properties, we refer to an account of the pharmaceutical preparations. As the volatile alkali is rarely produced from vegetables, but is generally obtained from animal matter, we shall consider that kind of alkali under the article ANIMAL.

ALLANTOIS, a gut-shaped vesicle investing the foetus, in cows, goats, sheep, &c. filled with a urinous liquor conveyed to it from the urachus. See an account of it under the article COW.

ALOE, called also *Fel Nature*; a plant which affords the purging gum of the same name. All the species, of which Miller enumerates thirty-seven, have thick fat leaves, like those of the house-leek, but much larger, running two or three feet higher. An erroneous notion prevails, of the *aloe* plant blowing but

once in a hundred years; a skilful gardener can make them flower at any time by setting them in a bed of tanners' bark. The best is said to grow in India, but all Asia produces excellent plants; in most warm climes they are produced, as in the West Indies, &c.

ALOEES, an inspissated gum of the whole plant described above. It is reported that Alexander, landing on the island of Succotora, or Zocotria, at the mouth of the Red Sea, in one of his expeditions, took notice of the *aloe* plant, and from that it was brought into use, and called SUCCTORINA.

Of this gum we have three kinds in the shops.

1. ALOE SUCCTORINA vel ZOCOTORINA. SUCCTORINE ALOES.

It is imported from the island Succotria, in the Indian Ocean, wrapped in skins; it is obtained from the *aloe Succotorina angustifolia spinosa flora purpurea*. Com. Hort. i. p. 9. t. 48. The ALOE PERFOLIATA, *foliis caulinis dentatis, amplexicaulibus vaginantibus, floribus pedunculatis cernuis corymbosis subcylindricis*. CL. HEXANDRIA; ORD. MONOGYNIA. Linn. Gen. Pl. 430. The gum is bright on its surface, and of a reddish colour, with a purple cast; but when powdered it is of a golden hue. It is hard and friable in very cold weather, but in summer it softens very easily betwixt the fingers. It is extremely bitter, and also accompanied with an aromatic flavour, but not so much as to cover its disagreeable taste. Its scent is rather agreeable, being somewhat similar to that of myrrh.

2. ALOE HEPATICA, vel ALOE BARBADENSIS. The COMMON, or BARBADOES, or HEPATIC ALOES, called *kadanaku*, *catevala*. ALOE *perfoliata floribus pedunculatis cernuis corymbosis subcylindricis, vera. foliis spinosis confertis dentatis vaginantibus planis maculatis*, Linn. The best is brought from Barbadoes in large gourd-shells; an inferior sort in pots, and the worst in casks. It is darker coloured than the Succotorine, and not so bright; it is also drier and more compact, though sometimes the sort in casks is soft and clammy: to the taste it is intensely bitter and nauseous, being almost totally without that aroma which is observed in the Succotorine; to the smell it is strong and disagreeable.

3. ALOE CABALLINA, vel ALOE GUINEENSIS, *caballina vulgari similis sed tota maculata*; HORSE ALOES. It is not easy to believe, as is generally reported, that this is only the more impure part of the Barbadoes *aloes*, because the difference does not consist in the purity, but in the quality. It is very distinguishable from both the others by its strong rank smell; in other respects it so agrees with the Barbadoes species as to be often sold for it. Sometimes its purity

and clearness are such, that one cannot distinguish it from the Succotorine *aloes*; but either its offensive smell, or its want of the aromatic flavour, betrays it. This species has been frequently employed by farriers.

The general nature of these three kinds are nearly the same; their particular difference only consists in the different proportions of gum to their resin. From their intense bitterness they have received the quaint name of *fel natura*, Nature's gall.

*ALOES* consists of a small portion of resin, and a large one of gummy matter; to separate which, boil four ounces of *aloes* in a quart of water, until it is dissolved; let this solution stand in a cool place all the night, by which time the resin will be deposited at the bottom of the vessel, the gum continuing in its dissolved state, but by evaporation it is recovered in a solid form. Twelve ounces of the Barbadoes *aloes* yields nearly four ounces of resin, and eight of a gummy extract. The same quantity of the Succotorine yields three ounces of resin, and nearly nine of gummy extract.

The *aloes* may be purified by solution in water, and an evaporation so immediately after, that the resin may not have time to settle.

When the resin settles from the watery decoction of the *aloes*, the impurities subside therewith, and are to be separated by dissolving the resin in spirit of wine; then, after a due separation of the solution from its sediment, the resin is to be restored by evaporating the spirit with a gentle heat.

The resin of *aloes* hath but very little scent; that from the Succotorine hath very little taste, from the Barbadoes a slight bitter, and from the caballine somewhat more of the aloëtic flavour.

The gummy extracts are less disagreeable than the crude *aloes*; that of the Barbadoes smells rather stronger than that of the Succotorine, but in taste is less ungrateful than it; that of the Succotorine has very little smell, and is scarcely unpleasant to the taste; that of the caballine *aloes* hath a rank smell, but its taste is not worse than that of the Succotorine.

In the resinous part consist the healing qualities, hence for *external uses* the Barbadoes is the best; *internally*, however prepared, the resin hath very little cathartic power. In the gummy extract resides the purgative, and all the other qualities. The gum of the Succotorine *aloes* purges more, and with greater irritation, than the gum of the Barbadoes; the former is therefore to be preferred where a stimulus is required; the latter may be preferred for common purges. Of all the known purges administered to the horse, this gum is supposed to be almost

the only one that is efficacious; experiments at the VETERINARY COLLEGE having demonstrated, that other supposed active and expensive cathartics, as Rhubarb, Colocynth, &c. have *no effect whatever on that animal*. These, indeed, having been always accompanied with *aloes*, the former have been supposed to assist in the effect produced. The PROFESSOR of the College, Mr. COLEMAN, recommends the exhibiting of *aloes* in the dose of a drachm, repeating it every three hours, till the effect is produced; because the common practice of giving horses such an unreasonable quantity of this medicine at one dose has, on many occasions, proved dangerous, or at least has produced very serious inconvenience from its drastic effect on the villous surface of the intestines. Its efficacy in the jaundice in horses is very considerable, as it proves a succedaneum to the bile, which in that disease is defective either in quantity or quality, *Aloes* seem only to act on the large intestines, and produce, in moderate doses, one or two copious evacuations of alvine contents. Alkaline salts lessen the purgative quality of *aloes*; and long boiling quite destroys it.

This gum is sometimes adulterated with acacia, at others with gum-arabic. Accompanied with heat, the crude *aloes* may be all dissolved in water; but when it is cold, it lets fall its resin. A mixture of pure water two parts, and proof spirit one part, perfectly dissolves it without heat; but rectified spirit of wine dissolves it most speedily. If water or wine is the menstruum, the *aloes* become tenacious, and dissolve slowly; in this case, white sand should be well mixed with the powdered *aloes*, before being added to these last-mentioned fluids.

Aromatics correct the offensive qualities of *aloes* the most perfectly. The canella alba answers tolerably, and without any inconvenience; but some prefer ginger or the cassia caryophyllata for this purpose.

There are several good preparations of *aloes*, calculated for human diseases. The only one we need to notice in a work of this sort is the *compound tincture*, which is occasionally applied to wounds or ulcers, and for which the following is the recipe: Take Simple Tincture of Myrrh, two pounds, Succotorine *Aloes*, English Saffron, of each, three ounces. Macerate them together till the *aloes* is dissolved. The Saffron in this composition is not only expensive but totally useless.

ALTERATIVES, or AITERATIVE medicines, in the materia medica, are such medicines as have a power of changing the constitution, without any sensible increase or diminution of the natural evacuation.



The whole materia medica has been very properly divided by the writers in physic into three classes, viz. alteratives, evacuants, and restoratives; but this division being in itself too general, each of these have been split into subdivisions, that might more particularly denote the several intentions that are necessary; for instance, in altering the constitution insensibly or sensibly, by a discharge of what is hurtful or superfluous; or by adding and repairing what is wanting; and this is the more necessary, by reason of the different degrees of strength and efficacy, in medicines of the same general intention. See the articles EVACUANTS and RESTORATIVES.

Now, as all alteratives differ only in degree from those which cause a sensible evacuation, so these differ also from one another in their several efficacies, and, according to frequent observations and experiments, are found adapted in different ways to contribute to that general end of procuring health: so also, those which work by sensible operation differ from one another; as some are peculiarly adapted to work by sweat, some by urine, and others by excretion of the feces, or dung; and these also allow of several gradations, some being stronger, and some weaker than others. One of the most common alteratives given to Horses is a mixture of crude antimony and sulphur, particularly when they are moulting, which process it appears to facilitate, and makes the animal sleek and glossy.

ALTHÆA, *marsh mallow*, a plant of very trifling medical powers. As it is very mucilaginous, it is employed, with other herbs, in emollient fomentations and poultices.

ALVEOLAR processes, such bony processes as, to the eye, have the appearance of the cells in a honeycomb. See ALVEOLI.

ALVEOLI, the sockets of the jaws of an animal, in which the teeth are set. They are lined with a very sensible membrane, which also incloses the roots of the teeth. The number of these alveoli differs in different animals.

ALVUS, the BELLY. See ABDOMEN.

ALUM, a kind of mineral salt, of an austere taste, leaving in the mouth a sense of sweetness, accompanied with a considerable degree of astringency. It is composed of vitriolic acid, united with an argillaceous earth. It dissolves sufficiently well in cold, but in much larger quantity in boiling water. Neumann says, that *alum* requires ten times, and other authors say that it requires fourteen times, its weight of water to dissolve it. It retains half its weight of water in crystallising; of which crystallisation it is susceptible by the evaporation and cooling of the

water in which it is dissolved. The figure of its crystals, like that of the crystals of other salts, varies according to the circumstances concurring during the crystallisation. In Italy this salt is obtained from a soft reddish stone; about Puteoli, from several kinds of earth; and in England from a whitish or blueish stone, called *Irish slate*.

Alum, whether exhibited internally or externally as a medicine, is one of the most powerful astringents known; (see ASTRINGENTS). In the former case it acts more quickly and in a smaller dose than the vegetable astringents, and its effects appear much sooner than we could possibly expect. It is less stimulant too, and of more general use, than the metallic astringents.

But the most important use of alum, in veterinary medicine, is that of a topical application to sores; or to wounded blood vessels as a styptic; (see STYPTICS). Burnt alum, finely powdered, and sprinkled on fungous [commonly called *proud*] flesh, restrains its growth, or destroys it when already produced. Dissolved in water, and applied on pledgets of tow to ulcers, it promotes their healing; and is useful also when applied as a lotion, to strains, bruises, &c.

AMALGAM, a substance produced by the solvent powers of quicksilver on other metals. Gold, silver, lead, tin, &c. will amalgamate in this manner, and are supposed to possess some medicinal qualities in that state.

AMAUROSIS, a total blindness without any altered appearance in the eye. See GUTTA SERENA.

AMBER, a well-known substance used in medicine, is found in several parts of the world: the most considerable quantities are taken up from regular mines in some of the inland countries belonging to the king of Prussia; but the finest sorts are thrown up by the sea, particularly in stormy weather, about Pillau.

There are various conjectures respecting the origin of amber. The Arabians say, that the black poplar affords *amber*; the poplar they call *haur*, and the tear *haurus*, which was changed to *hambrus*, to signify *amber*; or, according to some, into *avrum*, or *abrum*, and thence into *ambra*, to signify the tear of the poplar; and, probably, from the likeness of the poplar gum and amber, the same name obtained for both.

LEO AFRICANUS says that the whale is called *hambara* by the inhabitants of Fez and Morocco; which perhaps gave rise to the notion, that *amber* was the dung or spawn of the whale.

But notwithstanding these various conjectures, it is most probable that it is chemically formed by the concurrence of mineral oil, or petroleum, with vitriolic acid. And thus it is easy



to conceive how insects of the most tender kind are enveloped, without injuring them, or altering their natural appearances. Some assert that bitumens are essentially mineral; others, and by far the greatest number, that they proceed originally from vegetable substances. In favour of the latter opinion, see Macquer's Chemical Dictionary. Dr. Saunders, in his Lectures on the Theory and Practice of Chemistry, says, all fossil inflammable matter is supposed to proceed from animal and vegetable matters, altered by time; he further observes, that sulphur is obtained by mixing vitriolic acid and spirit of wine rectified, or oil. On the other hand, Dr. Lewis observes, that the oil of *amber* differs from all those of the vegetable kingdom; and agrees with the mineral petrolea, in not being soluble, either in its rectified or unrectified state, by spirit of wine, fixt alkaline lixivia, or volatile alkaline spirits; the oil, after long digestion or agitation, separating as freely as common oil does from water. He further observes, that mineral bitumens are different in their qualities from the vegetable resins; and, in the mineral kingdom, we find a fluid oil very different from vegetable oils. The mineral oil is changed by mineral acids into a substance greatly resembling bitumen; and the vegetable oils are changed by the same acids into substances greatly resembling the natural resins. From bitumens we gain by distillation the mineral oil; and from resins, the vegetable oil; distinct in their qualities as at first: vegetable oils and resins have been heated with all known mineral acids, but have never yielded any thing similar to the mineral bitumens. It seems, therefore, as if the oily products of the two kingdoms were specifically and essentially different. The laws of chemical enquiries at least demand, that we do not look upon them any otherwise until we are able to produce from one a substance similar to the other: when this is done, and not before, the presumption that nature effects the same change in the bowels of the earth, will be of some weight. See Dr. Lewis's Note in his Translation of Neumann's Chemistry, vol. ii. p. 3. Neumann says, in speaking of *amber*, "It is most probable that *amber* is generated instantly from the concurrence of mineral oil, or petroleum, with vitriolic acid, in the form of vapours."

The yellow *amber* should be of a citron yellow, or of a golden colour, bright, transparent, easily taking fire, and exhaling a pleasant fragrant smell.

In Holland, a vegetable resin, called GUMMI DE LOOCK, is sold under the name of American *amber*; but it is less electric than *amber*, wants the peculiar smell when it is burning, dissolves

readily in spirit of wine; and, when distilled, it does not afford the same principles as the *amber* does.

If *amber* is distilled in a retort, by a strong heat, it yields a phlegm, or oil, which grows thicker and thicker as the distilling continues, and a particular kind of salt. The *amber* is powdered and mixed with three times its weight of white sand before it is committed to distillation; a retort is half filled with it, and then the fire is gradually increased until a spirit rises, but not more than to make water boil; after this, the heat should be greater, but gradually increased, yet not so as to make the *amber* smell much. The receiver may be left unluted; thus it can be occasionally removed, and the salt swept out, and so hindered from melting with the oil that rises: the distillation is continued until no salt is seen to arise. After the distillation is ended, gather all the salt together, and dry it by pressing it gently between some sheets of spongy paper: then, to purify it, boil it in the fluid that arose in the beginning of the distillation, which is called the spirit of *amber*; or it may be boiled in common water, then set to crystallise; this may be repeated until it is sufficiently freed from its oil. When this salt is pure, it is of a white colour, of a pungent, penetrating, grateful, acid taste: it dissolves in rectified spirit of wine with difficulty, though assisted by heat, but readily in water.

The salt of *amber* is mixed with sal ammoniac; but this is discovered by an urinous smell arising on rubbing it with the salt of tartar: it is mixed with nitre, but this is discovered by the nitrous taste. When mixed with cream of tartar, it is discovered by dissolving it in water, for the salt of *amber* readily dissolves, and leaves the cream of tartar undissolved. When it is mixed with the salt of coral, it is discovered by laying it on a red-hot iron, on which the salt of *amber* flies off, but that of the coral remains in the form of a white powder.

To this salt, given in human diseases, Boerhaave and other physicians attribute many virtues. Dr. Alston, of Edinburgh, says, that when divested of the oil it is no better than common salt; Dr. Cullen, that when genuine and purified, its virtues are little better than that of vegetable acids. It is used to render the operation of aloëtic and resinous purges more mild, and also more certain, and in this view, perhaps, it may be worth the attention of the veterinary practitioner.

The oil which rises in distillation may be rectified by distilling it from pure water. The rectified oil hath a strong bituminous smell, and a pungent acrid taste; it heats the body and pro-

notes the fluid secretions. It has been given in the dose of half an ounce or an ounce, for the gripes, in horses and horned cattle: externally it is a warm stimulant, but not equal to oil of turpentine. This oil agrees with the mineral oils in refusing to mix with vinous spirits. The London College order the salt and oil to be obtained from two pounds of *amber* placed in a sand bath, and gradually increasing the heat, whence an acid liquor, oil, and salt mixed with the oil, will come over. To purify the salt, they take half a pound of it and one pint of distilled water; the salt is boiled in the water, and then set by to crystallise. In order to purify the oil, they take a pound, and distil it three times. Its dose is from five to thirty drops. The Edinburgh College have given the following directions for these processes.

*Oil and salt of amber.*

Take equal parts of amber reduced to a powder and of pure sand. Mix them, and put them into a glass retort, of which the mixture may fill one half; then adapt a large receiver, and distil in a sand-furnace, with a fire gradually increased. At first a spirit will come over, with some yellow oil; then more yellow oil, along with a little salt; and on raising the heat, more of the salt, with a reddish and black coloured oil. When the distillation is finished, empty the liquor out of the receiver; and having collected together the salt which adheres to the sides, dry it by gentle pressure between the folds of blotting paper; then purify it by solution in warm water and by crystallisation.

The oil seems to be the only active medicine as an antispasmodic, which power is increased by its purity, acquired by repeated distillations.

AMBIDEXTER, an operator equally dexterous with both hands. This qualification is no less desirable for the veterinary practitioner, than for the surgeon who operates on the human body.

AMBLE, a peculiar kind of pace, wherein a horse's two legs of the same side move at the same time.

In this pace the horse's legs move nearer the ground than in the walk, and, at the same time, are more extended: but what is most singular in it is, that the two legs of the same side, for instance, the off hind and fore leg, move at the same time; and then the two near legs, in making another step, move at once; the motion being performed in this alternate manner, so that the two sides are alternately without support, or any equilibrium between the one and the other, which must necessarily prove very fatiguing to the horse, being obliged to support

himself in a forced oscillation, by the rapidity of a motion, in which his feet are scarcely off the ground. For if in the amble he lifted his feet as in the trot, or even in a walk, the oscillation would be such, that he could not avoid falling on his side; and it is only by keeping his feet very near the ground, and by the quick alternate motion, that he supports himself in this pace, in which the hind leg is not only to move at the same time with the fore leg of the same side, but also to gain on it, or touch the ground a foot, or a foot and a half, beyond the spot where the latter grounded. The further the hind leg extends beyond the place where the fore leg grounded, the better the horse ambles, and the whole motion is proportionally faster. Thus the whole difference between the amble and the trot consists in this, that the two legs moving together in the latter are in a diagonal position, whereas in the former the two legs of the same side move together.

This pace, which is very fatiguing to the horse, is very easy to the rider. It has not the roughness of the trot, which is caused by the resistance of the fore-leg, at the lifting up of the hind; because in the amble this fore leg is lifted up at the same time with the hind leg of the same side; whereas in the trot the fore leg of the same side is at rest, and resists the impulse during the whole time that the hind leg is in motion.

They who are skilled in horsemanship tell us, that horses which naturally amble never trot, and that they are a great deal weaker than others. Colts, indeed, very often move in this manner, especially when they exert themselves, and are not strong enough to trot or gallop. Most good horses, which have been over-worked, and on the decline, are also observed voluntarily to amble, when forced to a motion swifter than a walk.

The amble may, therefore, be considered as a defective pace, not being common, and natural only to a very few horses, which, in general, are weaker than others. Add to this, that such amblers as seem the strongest, are spoiled sooner than those which trot or gallop.

There are various methods of discipline for bringing a young horse to amble: some choose to toil him in his foot pace through new ploughed fields, which naturally inures him to the stroke required in the amble; but this disorderly toil is very apt to weaken, and sometimes to lame a young horse. Others attempt it by stopping him in a gallop, or trot; so that by losing both, he necessarily stumbles on an amble; but this is apt to spoil a good mouth and rein, and exposes the horse to the danger of an hoof-reach,



or finew strain, by over-reaching, &c.—Some prefer ambling by weights as the best way, and in order to do this, either overload the horse with excessive heavy shoes, or fold thick pieces of lead about the fetlock pasterns, without considering that the former are apt to make him interfere, or strike short with his hind-feet; and that the latter, besides that mischief, expose the horse to incurable strains, crushing of the coronet, breeding of ring-bones, &c. Others load the horse with earth, lead, &c. which often occasion a swaying of the back, overstraining of the fillets, &c. Some endeavour to make him amble in hand, before they mount his back, by means of some wall, smooth pale or rail, and by checking him in the mouth with the bridle-hand, and correcting him with a rod on the hinder hoofs, and under the belly, when he treads false; but this is very apt to spoil a spirited horse, even before he can understand what you would have him do.

The best method seems to consist in trying with your hands, by a gentle and deliberate racking and thrusting of the horse forwards, by helping him in the weak part of his mouth with your snaffle, which must be smooth, big, and full; and correcting him first on one side, then on the other, with the calves of your legs, and sometimes with a spur. If you can by this means make him fall readily into an amble, though in a shuffling and disorderly manner, much labour will be saved; for that aptness to amble will render the tramel more easy to him, and he will find the motion without stumbling, or being frightened. See the article TRAMEL.

**AMMONIA MURIATA**, a salt formerly known by the name of *crude sal ammoniac*. Various preparations of it are employed in veterinary practice, for which reason we shall here give them in detail.

*Prepared ammonia. (L.)*

Take of sal ammoniac, powdered, one pound; prepared chalk, two pounds. Mix and sublime.

This was formerly called *volatile sal ammoniac*.

*Water of ammonia. (L.)*

Take of sal ammoniac, one pound; pot-ash, one pound and a half; water, four pints. Draw off two pints, by distillation, with a slow fire.

This was formerly called *spirit of sal ammoniac*.

*Spirit of sal ammoniac. (E.)*

Take sal ammoniac, purified vegetable fixed alkali, of each sixteen ounces; water, two pounds. Having mixed the salts, and put them into a glass retort, pour in the water: then distil to dryness with a sand-bath, gradually raising the heat.

*Sal ammoniac* is a neutral salt, composed of volatile alkali and marine acid. In these processes the acid is absorbed by the fixed alkali or chalk; and the volatile alkali is of course set at liberty.

The volatile alkali is, however, in its mild state; being combined with the fixed air, or discharged from the fixed alkali or chalk on their uniting with the muriatic acid.

The fixed alkali begins to act on the sal ammoniac, and extricates a pungent urinous odour as soon as they are mixed. Hence it is most convenient not to mix them till put into the distilling vessel. The two salts may be dissolved separately in water, the solutions poured into a retort, and a receiver immediately fitted on. An equal weight of the fixed salt is fully, perhaps more than, sufficient to extricate all the volatile.

The matter which remains in the retort after the distillation of the spirit, and sublimation of the volatile sal ammoniac, is found to consist of marine acid united with the fixed alkali or chalk employed.

The caput mortuum of the volatile salt, where chalk is employed as an intermedium, exposed to a moist air, runs into a pungent liquor, which proves nearly the same with a solution of chalk made directly in the marine acid. It is called by some oil of chalk. If calcined shells, or other animal limes, be mingled with sal ammoniac, a mass will be obtained, which likewise deliquesces in the air, and forms a liquor of the same kind.

*Water of pure ammonia. (L.)*

Take of sal ammoniac, one pound; quick-lime, two pounds; water, one gallon. Add to the lime two pints of the water. Let them stand together an hour: then add the sal ammoniac and the other six pints of water boiling, and immediately cover the vessel. Pour out the liquor when cold, and distil off with a slow fire one pint.

This spirit is held to be too acrimonious for internal use, in the human subject, but has been employed as a powerful menstruum for some vegetable substances, as Peruvian bark, from which the other spirits extract little. It is also most convenient for the purpose of rendering oils miscible with water, and in the composition of stimulating liniments. In the horse, however, spirit of turpentine is a much more powerful stimulant, applied to the skin.

**AMMONIACUM GUM**, a concrete gummi-resinous juice, produced in the East Indies, whence it is brought in masses or tears. Its properties and sensible qualities somewhat resemble those of *Assa Fœtida*.



**AMPHIBIOUS** (from *αμφω*, and *βίος*, *life*). Animals are thus called that are capable of living as well by land, or in the air, as by water; and of dwelling in either at pleasure: but it will be difficult to find any animal that is equally qualified for either. Dr. Parsons, an ingenious naturalist, in a paper read before the Royal Society, from considering their economy respectively, divides them into two orders: 1st. Such as enjoy their chief functions by land, but occasionally go into the water; such as otters, beavers, some kinds of rats, &c.—2d. Such as chiefly inhabit the water, but occasionally go ashore; as frogs, and water serpents or snakes, of every kind: for a further account, see *ENGLISH ENCYCLOPÆDIA*. The *amphibia*, according to Linnæus, are a class of animals, whose heart is furnished with one ventricle and one auricle, in which respiration is in a considerable degree voluntary.

**AMPUTATION**, the operation of cutting off a limb, an expedient frequent in the human subject to preserve life, but not resorted to in veterinary practice. The operation of *EXCISION*, however, is not uncommonly required in treating the external diseases of domestic animals.

**ANALEPTICS**, another name for *RESTORATIVES*, particularly such as are of a cordial nature.

**ANALOGY**, the mode of reasoning on things not perfectly known, by comparison with others which are better understood, and drawing conclusions from their similitude. Hence, in medicine, it is a comparing of causes of diseases with each other, and the remedies preventive and curative, and fixing our ideas respecting them from their likeness to each other. Considerable errors, however, have arisen from *mistaken analogies*; and we must be particularly on our guard, in applying human medicine, surgery, &c. to brute animals, not to carry our ideas of an existing analogy too far: though indeed an error on this side must be excusable, considering the few facts of which we are as yet able to avail ourselves.

**ANALYSIS** (from *αναλυω*, to *resolve*). In chemistry, it is the term used for decomposing any mixed body, and reducing it into its constituent parts; and this indeed is the chief object of the art of chemistry. The chemists make use of two modes of analysis: 1st. By fire. 2. By menstrua. Indeed the modes of decomposing bodies are all founded on the difference of the properties belonging to the different principles of which the body to be analysed is composed. Suppose, for instance, a body to be composed of several principles, possessed of different degrees of volatility, and of some which

are fixed, the volatile parts will rise in proportion to the degrees of volatility which they possess; the most volatile first, on the application of gradual heat; then the next in degree; whilst the fixed, capable of resisting the action of the fire, will remain at the bottom of the vessel. This is called *ANALYSIS BY FIRE*. But when a body is compounded of several substances, one of which for instance is soluble only by spirits of wine, a second is soluble only by water, and a third is soluble only by æther; these substances may be very easily separated from each other, by submitting successively the compound body to the action of these menstrua, each of which dissolves that particular substance to which it has an affinity, and from which it may afterwards be readily separated. This is called the *ANALYSIS BY MENSTUA*. See on this subject, Nicholson's *Chemical Dictionary*; *Memoirs of the Royal Academy of Sciences*, for the years 1719, 1720, 1721; *Elements and Principles of Chemistry*, by Lavoisier, Fourcroy, Nicholson, Chaptal, &c.

**ANASARCA** (from *ανα*, *through*, and *σαρξ*, *flesh*); in medical writings called also *catasarca*, *episarcidium*, *intercus*. *Pituita alba*, *hyposarca*, *hyposarcidies*, *veterinum*. Galen applies the term *hyderos* to this disease. In its beginning, it is called *phlegmatia*, *phlegmatitia*. A species of *DROPSY* from a serous humour, spread between the skin and flesh, or rather a general accumulation of lymph in the cellular system. The swelling of the limb of a horse affected with the *GREASE* is *anasarcous*.

**ANASTOMOSIS**, in anatomy, an *inosculation*, or *joining of mouths*, between vessels which meet each other in any part of an animal body. Thus different branches of the same system of blood vessels anastomose, in order to avoid the inconveniences which pressure might otherwise produce. An anastomosis also exists between the extreme arteries and veins, as the blood passes directly from the mouths of the former into those of the latter, to be conveyed back to the heart.

**ANATOMY**, is the art of dissecting, or taking to pieces and examining, the several parts of an animal, with a view to discover their structure and uses.

Anatomy, in respect of its subject, is divided into *human* and *comparative*. Human anatomy is that which is employed on the human body, and comparative anatomy, that which is employed on the bodies of other animals. The latter, in this work, we are more immediately concerned in.

As the great end of anatomy is health, for the preservation of which, restoring it when

impaired by diseases, or even preventing their access; nothing surely is more necessary than a true knowledge of the structure of that frame which is liable to be injured. Hence it appears, that the use of anatomy to the medical and veterinary practitioner is most indispensably necessary, as without a perfect knowledge of it, they cannot do justice to their several professions. What the needle is to the mariner, anatomy is to these; and we may venture to say, that without its assistance they would rather be detrimental than beneficial to the objects of their care.

Dr. Monro, who considered the human body as the primary object in the pursuit of comparative anatomy, states its principal advantages to be the following: *First*, he says, it furnishes us with a sufficient knowledge of the different parts of animals, to prevent our being imposed upon by those authors who have delineated and described several parts from brutes as belonging to the human body. *Secondly*, it helps us to understand several passages in the ancient writers on medicine, who have taken many of their descriptions from brutes and reasoned from them. *Thirdly*, great use is derived from this science, in the light it casts on several functions in the animal economy, about which there have been disputes among anatomists. To these we will add a *fourth*, and by no means trivial consideration, namely, that it is of essential importance to a right understanding of veterinary medicine.

It is altogether needless to insist on those parts whose use is plainly understood when once their structure is unravelled. Thus, for instance, if we be acquainted with the action of the muscles in general, it will not be difficult to determine the use of any particular muscle whose origin and insertion is known, if we at the same time consider the various connections of the bones to which it is fixed, and the different degree of mobility they have with respect to each other. In the same manner, if we know the use of the nerves in general, we can easily assign the use of those nerves which are distributed to any particular part. There is however occasion for a complete osteology, myology, &c. of the several animals that require our notice, though we need not trouble ourselves about the structure of any of the parts, unless when it serves to illustrate some of the purposes of the present work.

That examining the structure of the parts in brutes is of consequence to mankind, no less than to the welfare of those domestic animals themselves which are the objects of veterinary medicine, is evident from looking into the works of some of the earliest and greatest mas-

ters of anatomy, who for want of human subjects often borrowed their descriptions from other animals. The great Vesalius, although he justly reproves Galen for this fault, is guilty of the same himself, as is plain from his delineations of the kidneys, uterus, the muscles of the eye, and some other parts. Nor is antiquity only to be charged with this, since in Willis's *Anatomia Cerebri* (the plates of which were revised by that accurate anatomist Dr. Lower), there are several of the drawings taken from different brutes, especially the dog, besides those he owns to be such. As a constant application to comparative anatomy, even in cases not directly connected with the objects of his art, may be eventually of importance to the veterinary practitioner, we shall not confine our remarks to the horse, cow, &c. but shall notice, in their proper places, whatever may be known of the structure of other animals.

The animal kingdom indeed, as well as the vegetable, contains the most surprising variety; and the descent in each is so gradual, that the little transitions and deviations are almost imperceptible. The bat and flying-squirrel, though quadrupeds, have wings to buoy themselves up in the air. Some birds inhabit the waters; and there are fishes that have wings, and are not strangers to the airy regions: the amphibious animals blend the terrestrial and aquatic together.

As there is then such a vast variety, it is not only needless, but impossible, to consider all of them particularly. We shall take only some of the most remarkable genera; and hope, from what will be said of them, any of the intermediate degrees may be understood.

In treating of quadrupeds, authors divide them into the carnivorous, *i. e.* those that feed indifferently on animal and vegetable substances, and granivorous: an instance of these we have in the ruminant kind. The fowls are also divided into those that feed on grain, and those that feed on flesh. As they constitute one of the great classes into which animals are divided, and as every advance in knowledge, with respect to the structure of any one animal, must either directly or indirectly cast some light on the structure of some part of every other, we propose to give a few particulars concerning them.

In enquiring into the structure of different animals, we ought to be previously acquainted with the form of their bodies, manner of life, kind of food; or, in short, with their natural history; which will lead us to account for the reason of their different structure, and hence explain the actions of other animal bodies. Of all those particulars a detail will be found under the



titles of the different subjects in their alphabetical order.

**ANATOMY of the HORSE.** Under this article, we first deliver some preliminaries, relating to the anatomy of the horse, necessary to the knowledge of his diseases, and to the better understanding the parts and mechanism of that animal. Our account must be general, and only relate to the internal constituent parts; because we purpose to treat of the internal and external parts, with such other things as relate to the subject, in separate articles, and under their several names.

A *horse*, like every other animal, is, in the embryo, a soft contexture, consisting of such properties as, in time, grow to flesh, blood, and bones, capable of being organised and animated. All the parts of an animal, from its first rudiment, are made up of fibres and threads, and retain the same contexture in all their changes, whether into membranes and solid flesh, or into bones or ligaments.

1. The bodies of all animals are made up of different parts, which are adapted to their several functions. The component parts that produce all the necessary functions of life consist of membranes, muscles, glands, blood-vessels, lymphatics, ligaments, cartilages, and bones. Horses and other brute creatures have also their hair partly for a cover to keep them warm, and partly for ornament; as the hoofs answer to the human nails, and are a defence to their feet; and it is very certain that all are made up of small fibres or threads. This is so plainly observable in the soft parts, that it needs no manner of proof, since every one must have taken notice, in tearing flesh asunder, that it is composed of little parcels or bundles, and these parcels may again be divided into others which are less, and afterwards into single threads which are infinitely smaller than a hair. Nature has also observed the same economy in the structure of the hard parts; for when we cut through a bone across, all the poruli, or little holes which form the interstices of its fibres, are in most part of it plainly perceivable, and if it be cut lengthways, their direction and course are no less manifest.

2. But of all the different substances whereof an animal body is composed, that which anatomists call a membrane is, next to a fibre, the most simple in its structure; it being a thin expanded substance, which has length and breadth, without much thickness, so that it seems only to be made up of single threads, laid lengthways, and across, like a fine web. We find some of them pretty thick, especially towards their origin: but others much thinner, than the film

of an egg. The whole body is wrapped up in one of these, and every particular muscle or bone is covered with its proper membrane, which preserves it from the injuries it would be exposed to from those parts which lie next it. Some parts are involved in double membranes, as the brain and spinal marrow, &c. which are very soft and delicate, and could not be easily preserved by a single one.

But besides their office of covering and defending all parts of the body, some of them serve as bags or tubes for food and excrements; others are formed into conduits for the blood and animal juices; but some of these being partly muscular, and partly membranous, they may be properly said to be of a mixt nature, as are most of the muscles, and many other substances throughout the body.

3. The *muscles* are made up of fleshy and tendinous fibres; which kind of structure is necessary to their action, they being the instruments of motion. Almost all muscles are fleshy and soft in the middle, and for that reason are capable of being contracted and dilated; for if they were otherwise, it would be impossible for any creature to move: whereas, by the figure they are of, we find them ready to answer every inclination of the mind, without pain or stiffness. The muscles are of different figures, some flat, as those on the rim of the belly, others more round, as those of the thighs and legs; all of which, towards their insertions, terminate in a strong, shining, sinewy substance, called a tendon.

4. A *ligament* is more compact and firm than a tendon, but not altogether so hard as a cartilage. It is that substance which ties the joints together, whereof some are round, as those we observe fastened to the head of a bone, and the inside of its socket; others are flat, and cover the joints, like so many pieces of leather nailed on to keep the two bones from falling asunder, and preserve an uniformity in their motion.

5. A *cartilage* or gristle, which we observe more or less at the end of most bones, is harder and less pliable than the ligaments; these, being of a smooth surface, and moderately thick, are a defence to the ends of the bones, which are more hard and brittle, and if they were not thus fortified might therefore be worn and abraded by their motion. The bones are of the most hard and compact substance in the whole body; they are without sense, as are also the ligaments and cartilages, otherwise they would be unfit to answer their particular functions: but, notwithstanding their insensibility, if any of them happen to be diseased, they will cause pain, and create a great deal of trouble.



6. As the bones are, of all the parts which compose the animal body, the most solid, the glands or kernels are reckoned among the softest, being curious bundles of vessels, which are infinitely small, and laid closely together in many circumvolutions and turnings. From some of these are separated excretions, and from others fluids, which have their peculiar uses.

7. The *veins*, *arteries*, and lymphatic vessels, are the conduits, through which all the liquid juices of the body pass. The arteries are vessels which carry the blood from the heart to the extremities, and the veins are the channels which carry back that portion of it which is more than sufficient for the nourishment of the particular members. The nerves are of a compact substance, like so many tough cords, of a white colour, and different sizes; some being pretty large, others infinitely small; and, though they seem to be solid and imperforate, that is to say, without any visible cavity in them, they communicate their influence from the brain to all parts of the body, and are the instruments of sensation. The *lymphatic* vessels carry the lymph separated by the lymphatic glands, and mix it with the blood.

In short, all the parts of the body, whether those that are hard, or those which are denominated soft parts, are nourished by blood, and their peculiar juices produced of blood; neither is it improbable, that the whole animal frame is composed of the several modifications of veins, arteries, nerves, and lymphatic vessels.

Under the article EXTERIOR we have given a description and figure of the HORSE merely deprived of his skin. From that something may be learned of his anatomical structure. The reader may also find the subject yet more fully treated under the articles BONES, HORSE, MUSCLES, SKELETON, &c. We shall here proceed to a minute description of Pl. II. beginning with the muscles, &c. of

#### The Head.

\* *abcd* The lateral dilator of the nostril and upper lip; *bc* its insertion into the upper lip and nostril; *d* its origin.

*f* The anterior dilator of the nostril.

*ghik* The orbicular muscle of the mouth; *g* the part belonging to the lower lip; *b* the corner of the mouth; *i* the part belonging to the upper lip; *k* fibres which tend upwards to the insertion of the nasal muscles of the upper lip.

*lmno* The long nasal muscle of the upper lip; *lmn* the fleshy part; *m* its origin; at *n* the tendon begins; *o* the tendon.

*ppq* The masseter.

*r* & *8* Buccinator.

*st* The broad ligaments of the eye-lids, which are membranous elongations formed by the union of the periosteum of the orbits, and pericranium along both edges of each orbit.

*uuw* The ciliaris muscle; *w* its origin.

*xy* A muscle belonging, in part, to the alæ narium *z*, but chiefly to the concha narium inferior; *x* its insertion into the alæ narium; *y* its origin, by a small tendon from the bone along the nasal muscle of the upper lip; below *x* it passes under the alæ narium to the inside of the nostril, and is there inserted into the concha narium inferior.

*z* Alæ narium.

& Septum narium.

2 2 3 The temporal muscle; 3 its insertion into the coronary process of the under jaw bone.

4 4 Muscular fibres which extend and draw outwards the pituitary membrane 5.

5 Membrana pituitaria.

6 7 7 A muscle called caninus, or elevator of the corner of the mouth, arising from the upper jaw bone under the muscle *xy*, and inserted at 7 7 into the buccinator.

9 10 The depressor of the lower lip; it arises along with the buccinator, and is almost divided into two muscles, one superior, the other inferior, for the passage of nerves and blood-vessels to the lower lip; the superior arises tendinous, and is inserted fleshy into the lower lip laterally; the inferior arises fleshy, and is inserted tendinous nearer the middle of the lower lip.

12 The elevator of the chin.

13 A nerve going to the alæ narium.

14 Vena angularis which is a branch of the vena jugularis externa anterior.

15 Arteria angularis.

16 A branch of the vena temporalis.

17 17 Two valves, in a branch of the jugular vein.

18 Branches of the nervus maxillaris inferior. They are branches of the third branch of the fifth pair of nerves.

19 The salivary duct.

20 The anterior cartilage of the outer ear.

21 The outer ear.

22 23 A muscle arising from the anterior cartilage at 22, and inserted at 23 into the outer ear.

24 A muscle which arises by two fleshy heads from the internal surface of the anterior cartilage, and is inserted into the lower convex part of the external ear near the root, nearer the posterior edge than the anterior. It assists the posterior part of the retrahens in action.

25 A muscle which is a sort of antagonist to that marked 24, it arises from the ridge of the occiput under the retrahens, and is inserted into

the ear at 25. It helps to turn the opening of the ear forwards.

26 26 26 *c* The parotid gland.

*In the Neck.*

*abc* Sterno mastoidæus, or sterno maxillaris; it arises from the top of the sternum at *b*, and is inserted by a flat tendon into the lower jaw bone, under the parotid gland at, or near, *c*; is likewise inserted into the root of the processus mastoidæus by a flat tendon.

*d* The spongy, fatty substance of the mane cut directly down the middle, and the left side remaining on to shew its thickness.

*e* Ligamentum colli.

*ff* Coraco-hyoidæus; it arises from the upper and internal side of the humerus, betwixt the insertions of the subscapularis and teres major by a flat membranous tendon; it begins to be fleshy as it comes from under the serratus minor anticus, and is inserted into the os hyoides.

*g* Sternohyoidæus.

*hi* Transversalis; *b* the tendinous part; *i* a fleshy part.

*kl* The tendon of the trachelo-mastoidæus; *l* a fascia or membranous part.

*mn* Rectus internus major capitis; *m* its lowest origin from the transverse process of the fourth vertebra of the neck, and the part *p* of the longus colli, which origin is sometimes continued down almost as low as the lower part of the transverse process of the fifth.

*oooo* Inter-transversales minores colli; they run from the transverse process of one vertebra to the transverse process of the next to it.

*pq* Longus colli.

*rstuvw* Splenius; *r* the part coming from the origin of this muscle, which is from the expansion common to it, and the serratus minor posticus, &c. It arises tendinous from the ligamentum colli under the rhomboides, and fleshy about the superior part of the neck.

At *s* it is inserted into, or attached to, the transversalis; at *t* to the tendon of the trachelomastoidæus; *u* the part which goes to be inserted into the occiput. It is also inserted into the transverse processes of the fifth, fourth, and third vertebrae of the neck, by flat, strong tendons, which run on the internal side of the muscle: it is externally fleshy within a minute or two of these insertions.

*x* Sternothyroidæus.

*y* Hyothyroidæus.

*z* Cricothyroidæus.

♂ The lower constrictor of the pharynx.

1 1 Vena jugularis communis.

2 Vena jugularis externa anterior.

3 Vena jugularis externa posterior, or superior.

4 Part of the carotid artery, or carotis communis.

5 Glandulæ claviculares, or axillares (in this animal, as there are no clavicles), or cervicales inferiores, or thoracicæ superiores lymphaticæ. They are lymphatic glands.

6 6 6 6 Branches of the cervical nerves accompanied with arteries which are distributed to the musculus levator humeri proprius, &c. and integuments.

7 Branches of the cervical arteries and veins coming out of the splenius to go to the trapezius and integuments.

*Muscles in the Neck and Trunk, which are inserted into the Scapula.*

*aab* Rhomboides; *aa* the origin from the ligamentum colli: it has another origin from the superior spines of the vertebrae of the back: *b* its insertion, or the part going to be inserted into the scapula.

*cdef* Serratus minor anticus; *cd* the fleshy part arising near *c* from the sternum, and part of the first rib, and from the cartilaginous endings of the second, third, and fourth ribs, near their joining to the sternum; and is inserted into the superior costa near the basis scapulæ and tendinous surface of the supra-spinatus; and is connected to the teres minor by the fascia *ef* which is sent from this muscle over the infra-spinatus scapulæ and supra-spinatus scapulæ to its outer edge.

Its flat tendon may be separated some part of the way to the basis and spine of the scapula from the tendinous surface of the supra-spinatus scapulæ.

*ghiklop* Serratus major anticus; *g* part of its insertion on the external part of the scapula; the rest of its insertion possesses about one half of the internal part of the scapula; *h* the part which arises from the transverse process of the third vertebra of the neck; *i* that from the fourth; *k* that from the fifth; *l* that from the sixth; *o* its origin from the seventh rib; *p* from the eighth.

This muscle arises from the six superior ribs, also within about five minutes of the cartilages. It does not adhere to the intercostals as it passes over them; but at the extremity of its origin sends off a membranous tendon over the intercostals towards the sternum: it arises all the way, from its first beginning, from the external surface of the ribs up to the insertion of the tendons of the sacro-lumbalis.



*Muscles, &c. inserted into the Humerus and Cubit.*

1 1 2 3 4 5 5 6 Pectoralis; 1 1 its origin from the linea alba abdomenis; 1 2 its origin from the lower part of the sternum; 3 its origin from the superior part of the sternum; the part 3 4, which is the superior part of this muscle, sends a flat membranous tendon in betwixt the biceps and levator humeri proprius, to which it is joined before its insertion into the humerus; 5 5 6 the flat tendon cut off at 5 5; the external part below this runs down the cubit.

*abcdef.* Supra-spinatus scapulæ; it continues its origin from the scapula from *a* to about *b*, and is inserted at *c* into the head of the os humeri, and capsular ligament, on the outside of the origin of the biceps cubiti; and by the other half into the head and capsular ligament of the os humeri, or the inside of the origin of the biceps cubiti; the lower part is covered by a tendinous fascia which runs from the supra-spinatus to the ferratus minor anticus, and binds that muscle in its place; it is pretty strong at *d*, but stronger at *c*, below the protuberating part of the humerus; at *e f* a fascia runs over this muscle from the ferratus minor anticus to the teres minor.

*hiklmn* Infra-spinatus scapulæ; from *h* to *i* are marked traces of the superior part of the trapezius's insertion on the surface of this muscle: it is attached to it at *i*, but strongly inserted into it near *b*; *hk* marks the insertion of the superior part of the trapezius upon this muscle; *l* the beginning of its origin from the dorsum scapulæ, and the cartilage on the border of that bone; *ikm* marks of the inferior outline of this muscle, where it is bounded by the teres minor, but not easily distinguished, by reason of the tendinous surface by which they are both covered and attached together; *n* its strongest tendon, by which it is strongly inserted into the protuberating part of the humerus under the tendinous expansion which goes from the teres minor to the lesser anterior saw muscle.

The lines upon this muscle mark the direction of some of the principal fibres of the tendinous covering.

*opqq* Teres minor; *o* its origin along with the triceps cubiti; *p* its insertion into the fascia arising from the humerus; *qq* its insertion into the humerus; from *q* to *k* it sends off a fascia that connects it to the ferratus minor anticus. The outline is much obscured by the fascia or tendinous covering of part of this muscle and the infra-spinatus with the supra-spinatus, which connects them. *kp* mark the cutting off of the membranous tendon of the superior part of the trapezius, as *hk* mark it upon the infra-spinatus.

*rrsttuu* Latissimus dorsi; *rrstt* its flat tendon; *rr* its origin from the spinal processes of the back; at *rs* this tendon is cut away from its attachment to the fascia lata; and at *rI* it is entirely cut away to uncover the glutæi; *ttuu* the fleshy part; *tt* the origin of the carnosus fibres.

*r, ru* Mark the traces of the inferior part of the trapezius inclosed betwixt the tendon of this muscle and a tendinous fascia which covers them both together; the said fascia being cut off at *ru*, and left on the latissimus dorsi, leaves the marks of the trapezius very plain; *tuu* shew the direction of the fibres of the tendinous fascia which connect this part of the muscle to the triceps cubiti: these fibres run over the infra-spinatus towards the insertion of the trapezius *hk*; *w* the fleshy part going to be inserted into the humerus; *sI* the aponeurosis which runs towards the obliquus descendens, and seems to be lost upon it, degenerating into a membrane.

*In the Trunk.*

IIIIKKKLM Obliquus externus, or descendens abdominis; IIIII the place where the thickest carnosus part ceases to arise from the ribs, and begins to run over them without adhering to them or the intercostals; KKK the ending or insertion of the carnosus part into the tendinous part; L the linea alba, or strong, broad aponeurosis, formed by this and the internal oblique muscle; it is like a broad, strong ligament, much resembling that of the neck, forming a sort of rugæ which appear on its external surface, running from above downwards; it has a communication with the ferratus major anticus by an aponeurosis, which arises from that muscle; its first or superior origin is from the fifth rib; it arises tendinous from the back part of the insertions of the indentations of the saw muscle into the ribs, and at its origin receives the insertion of the lower part of the indentations of the saw muscle; it arises from the posterior or inferior labium or edge of the eighth rib, nearly all the way from I to the insertion of one of the indentations of the superior, or lesser, posterior ferratus; from the posterior labium of the ninth, almost as high as where an indentation of the lesser ferratus posterius is inserted in the superior or anterior labium of the same rib; it also arises from the tenth; and, in this subject, opposite to the insertion of the ferratus minor posticus, it arises from all the ribs below that from the part where the indentations of the ferratus major posticus are inserted, or a little higher than that more externally, which is the case generally with the three or four last digita-



tions, but most as they are the lowest, and runs over the indentations of the saw muscle; these digitations continue their origin from the ribs all the way down to the part marked II III, and unite with the intercostal muscles in their passage; this muscle has a communication with the latissimus dorsi by an aponeurosis, which is sent over it by that muscle; *Ir* marks the cutting away of the tendon of the latissimus dorsi to uncover the glutæi, &c. it is inserted into the os illium and os pubis and to its fellow by the linea alba.

The blood-vessels and nerves which are marked on the thorax are those which were distributed to the parts taken off, as the membrana-carnosa, &c. and integuments; the nerves come from the nervi dorsales or costales and nervi lumbares; the arteries from the arteriæ intercostales inferiores and arteriæ lumbares; the veins from the venæ intercostales and venæ lumbares.

*In the right upper Limb.*

**NO**P Triceps brachii; **N** the head, which is called extensor longus major; **O** the short head of the triceps, called the extensor brevis; **P** the head called brachialis extensor longus minor. The short head **O** arises from the humerus, the other two from the scapula; its insertion is into the ancon.

**Q R S** Biceps brachii, or coraco radialis; **Q** the belly of the short head; **R** the belly of the long head; **S** the fascia of this muscle, which is sent down upon the muscles on the cubit.

**a A b c d e e g h** A fascia or strong membranous production lying over the extending muscles on the cubit; **a A** its origin from the edge of the triceps, from the levator humeri proprius, and from the two protuberating parts of the humerus, betwixt which it is extended like a strong ligament, and gives origin to some of the fleshy fibres of the extensor carpi radialis; it is inserted into the radius at **b c h**; at **h h** into the ligament, and being expanded over all the extending muscles which lie on the cubit, is inserted into the internal side of that bone, all along the bounds of the bending muscles on that side; there lies under it the extensor carpi radialis, of which **d** is the fleshy part; **e e f** the tendon; **b c** extensor digitorum communis; **g** muscles analogous to the extensors of the thumb.

This fascia is attached to the upper edge of the extensor digitorum communis, and may, perhaps, be properly called a flat tendon, arising common to this muscle, and the extensor carpi radialis, and sending an expansion not only over but also under them, and being attached to the bone on each side down to the carpus, and

also to the ligaments that bind down the tendons, running over the carpus, it makes a continued case for them from their originations down to the carpus, confining them steadily in their proper places. It communicates with the fascia of the biceps muscle, and with it is inserted into the tendon of the extensor carpi radialis.

**f** The tendon of the extensor carpi radialis inserted into the metacarpal bone.

**i** The tendon of the extensor digitorum communis going to its insertion into the coffin bone.

**m n o o P p q r s t** An expansion arising at **o o** from the articulating ligament, and at **n** from the olecranon: it receives an addition from the longus minor, and internal protuberance of the humerus, and expansion of the biceps muscle, then descends over the bending muscle down the ligaments on the carpus, to which it is attached, as well as to the bones of the cubit on each side of the bounds of the bending muscles; the different directions of its fibres being marked, as at **q, r**, &c. and its insertion into the bone on the external side, as at **P m b**; it then runs into the ligaments. It gives rise to fleshy fibres of the muscle **m**, which is analogous to the human extensor minimi digiti, all from the out-line **q m b** to the bone where the expansion is inserted. It has a strong insertion at **P** into that protuberating bone of the carpus called the os pisiforme or orbicular, and another betwixt the tendons **s s** of the flexor carpi ulnaris, besides its conjunction with the ligaments on the carpus, to which it is a considerable addition; **t** a part of the expansion which appears like a number of small tendons.

At **z a** a ligament arises which joins the tendon **m** near **m w**, and goes along with it to be inserted into the great pattern.

A slender ligament arises about **P**, which covers the tendon **m**, and then runs betwixt it and the tendon **i** to be inserted into the upper and anterior part of the great pattern.

**h h P p u w x y y z** Ligaments which bind down the tendons lying upon the carpus.

**16 h b y y u** A ligament whose fibres run in a transverse direction over the anterior part of the carpus, to which the carnosus membrane adheres at **u**; at **16** the ligament **h b y y 16** adheres to the burfal ligament; **x w** the insertions of the articular ligament; betwixt **c** and **h** is a ligament proper to the extensor digitorum communis, inserted at two protuberating parts of the radius, one on each side the channel in which the tendon lies; **p z w** a ligament, the fibres of which run in the upper part transverse, in the lower rather obliquely downwards; it lies on the lateral or external part of the carpus; it is covered (see

EXTERIOR) by the production of the membrana carnofa, and pectoralis, but rather the membrana carnofa, as it lies on the external part.

12 A ligament arifing at *i* and inferted at *2w*; it helps to bind down the projecting bone of the carpus, and ferves as a ftay to it when the flexor carpi ulnaris is in action: there is a large vein protuberating under it.

3 A ligament which helps to bind down the tendons of the fublimis and profundus.

4 The tendon of the profundus.

5 The tendon of the fublimis.

6 A vein arifing from under the hoof called vena plantaris externa.

7 Nervus plantaris externus.

9 An articular ligament.

10 A ligament fent from the interoffeus and inferted into the tendon of the extensor digitorum communis, which it binds down.

11 12 The horny part of the hoof; 11 the fuperior part; 12 the fole, or inferior part, going under the coffin bone.

13 A fubftance refembling the villous furface of a mufhroom arifing from the coffin bone, received by the like arifing from the hoof, which it mutually attaches.

#### *In the right lower Limb.*

*abccdddDefgghikl* Musculus fascia lata; *a* its origin from the ilium; *b* its anterior flefhy belly; *D* the posterior flefhy belly, over which the fascia lata fends a ftrong membrane, as well as under, fo that it is received or contained in a duplicature of the fascia lata; the fibres *dddDc* arifing from the fuperior or external fascia, and defcending to be inferted into the inferior on its external fide; the part *abc* arifes from the fpine of the os ilium internally tendinous; flefhy fibres arifing from that flat internal tendon, and defcending to be inferted chiefly into the infide of the fascia in the angle *cdgg*; the flefhy part in the fuperior angle *d* being thickeft, it gradually diminifhes till it is loft in the line *gg*; the dark colour of the flefhy fibres makes fome appearance in this angle, though the fascia is very ftrong, but not near fo much as the part *abg*, becaufe the covering of that is little more than a common membrane; the line *ac* marks the place where the fascia lata is cut off before it paffes betwixt this mufcle and the glutæus externus to be inferted into the anterior cofta of the os ilium; *de* marks the place where the production of the fascia lata, which is fent over this mufcle, is cut off; and *ddd* the place where it joins to the broad tendon of this mufcle, in which place it is cut off; *ef* fhews the place where the fascia lata is cut from its conjunction with what

may be called the broad tendon of this mufcle; *fg* marks the place where the fascia lata ceafes to adhere to the tendon of this mufcle, in order to pafs down over the leg and foot; at *b* the tendinous furface of the rectus cruris makes its appearance through the tendon of this mufcle; *ik* fhews the tendon or ligament which binds the patella to the tibia protuberating; *l* the ligament which binds the patella to the external protuberance of the os femoris.

This mufcle is inferted, by a ftrong tendon, into the tibia at *i*, adhering to the tendon of the anterior and middle part of the biceps mufcle in its way; its adhefion is all the way from *i* to the fuperior 4, where it has a little infertion into the patella.

*mnop* Glutæus externus; *m* a flefhy origin from the ligament which runs betwixt the fpinal and tranfverfe proceffes of the os facrum; *mn* the place where the fascia lata is cut off from the production which it fends under this mufcle, & from its attachment to the tendinous furface or the internal part of this mufcle, which arifes from the ligament running betwixt the os sacrum and ifchium; and which receives firft the infertion of thofe flefhy fibres which arife betwixt it and the ends of the fpinal proceffes of the os sacrum from the fame ligament, and then the fibres *nnno*, which arife from the fascia lata, and defcend obliquely inwards and downwards to be inferted into it; *oo* the place where this mufcle ceafes to arife from the fascia lata, and goes to be inferted at *p* into the lateral protuberance of the thigh bone; it fends off a fascia over the posterior part of the thigh bone, which runs in a tranfverfe direktion, and into which the pyramidalis is inferted, or joins in with it before its infertion into the fuperior or rather posterior part of this protuberance.

*qQrst* Glutæus medius; *qrs* its origin from the tendinous furface of the facro-lumbalis; *s* its origin from the ilium; *qQrs* the part which is covered by its own proper membrane, and does not adhere to the tendon of the latiffimus dorsi, &c. nor fascia lata; *qQt* the part which receives flefhy fibres from the fascia lata, going under the glutæus externus to be inferted into the great trochanter.

*ikluuvvwxxyz* 3 4 5 7 7 8 8 9 11 Biceps cruris; *uvvuv* mark the fuperior or anterior head where it arifes by carnos fibres from the fascia lata; its principal origin is from the ligaments which run from the fpinal to the tranfverfe proceffes of the os sacrum, and from thence to the tubercle of the ifchium; *wxyz* mark the inferior or posterior head, where it arifes by carnos fibres from the fascia lata; its principal origin is from the tubercle of the ifchium beginning at the ex-



tremity of that tubercle from the inferior angle, and continuing its origin by a flat strong tendon about six minutes along the inferior edge of that bone; this tendon is continued down from the tubercle towards *y* betwixt *y* and *z*, from which, a little above *y*, the fleshy fibres *y57* begin to arise; but the fleshy part *xz7* takes its origin from the tubercle, and continues it down the said tendon; *wv14* the fleshy part of the anterior head; where it does not arise from the fascia lata, it is inserted into the patella and superior and anterior part of the tibia; betwixt *p* and *w* are marked tendinous fibres which bind the anterior part of this muscle to the external glutæus; and a little below that it is inserted into the thigh bone by a flat tendon, and by this insertion the anterior part of this muscle is kept from starting too much forwards, the fibres of this tendon or ligament running in almost a transverse direction; the part *f44/w* lies under a fascia sent from the anterior part of the posterior head, to the tendon of the musculus fascia lata, which is cut off at *wf*, and on which the direction of its fibres are marked; *xz5y177* the fleshy part of the posterior head where it does not arise from the fascia lata; *1i889377* the tendon of the posterior head which joins the tendon of the anterior head near the patella, and is likewise inserted at *i88* into the anterior part of the tibia all the way down to the ligament common to the extensor longus digitorum pedis, and tibialis anticus, and into part of the upper edge of that ligament, and forms the tendon *11* with the fascia lata (which is cut off at *39*), and is inserted into the os calcis; *773* is the strongest part of the posterior tendon which is inserted into the os calcis.

15 The tendon of the plantaris.

16 17 17 18 19 Semi-tendinosus; 16 its origin from the ligament which runs betwixt the spines of the sacrum and the ischium, from the ligament betwixt the spinal and transverse processes of the os coccygis; 16 17 17 marks the part which receives fleshy fibres from the fascia lata; 18 the fleshy part which does not adhere to the fascia lata; 19 the tendinous production which wraps over the gemellus to join in with the fascia lata and tendon of the biceps cruris; the lines 16 17 betwixt this muscle and the biceps mark the fascia lata where it runs in betwixt these muscles; the posterior of the two lines marks the cutting off of the part of the fascia which runs over the semi-tendinosus to the large adductor of the thigh: its principal insertion is by a flat tendon into the superior and anterior part of the tibia internally; it is also attached to the plantaris near the bottom of its fleshy part by a flat tendon or expansion.

22 The large adductor of the thigh.

24 25 25 26 27 30 31 32 33 34 Ligaments which bind down the tendons, &c. on the tarsus, the inferior and anterior part of the leg or tibia, and the superior part of the metatarsus laterally and anteriorly; 24 25 25 a strong ligament common to the tendon of the extensor longus digitorum pedis and tibialis anticus; at 24 it falls off to be very thin, but continues to receive some originating tendinous fibres from the tibia for some way upwards, which run internally till they are lost in the tendinous expansion of the biceps muscle, &c. which is inserted into the upper internal edge of this ligament pretty strongly, but falls away to little or nothing in its way towards the external lateral part of this ligament. From 24 downwards this ligament strengthens as it descends towards 25 25, where it is thick and strong; its origin on the external lateral part of the tibia is marked 25 33: there is another strong ligament marked 26 proper to the tendon of the extensor longus digitorum pedis, which shews itself under the common membranous ligament 27 which covers it, and the articular ligament as well as blood-vessels, &c. upon the tarsus, and is attached to the ligament 24 25 25; at 25 25; at 30 are marked the directions of tendinous fibres, in this ligament, which arise from the bones of the tarsus and descend obliquely inwards and downwards; 31 marks fibres arising from the splint bone, or a bone of the metatarsus, and running transversely over the anterior part of the metatarsus joins in with the part 30; it is inserted into the superior and anterior part of the metatarsal bone; 34 marks some little appearance, by protuberation, of a ligament common to the tendon 37, and the blood-vessels marked 14; 32 marks a ligament proper to the said tendon 37, its origin and insertion belonging both to the tibia.

35 A ligament which binds down the tendons of the flexors.

36 36 Extensor longus digitorum pedis.

37 37 Peroneus anticus.

38 Flexor digitorum pedis.

39 A branch of the arteria tibialis anterior.

40 Plantaris.

41 Flexor digitorum pedis.

42 46 Vena plantaris externa.

43 Nervus plantaris externus.

44 The interosseus, &c.

45 A ligament sent from the interosseus, &c. by which the tendon of the extensor longus digitorum pedis 36 is bound down, otherwise it would start from the bone when the fetlock joint gives much way.

47 48 The horny part of the hoof; 47 the

superior part; 48 the sole, or inferior part going under the coffin bone.

49 A substance resembling the villous surface of a mushroom arising from the coffin bone, received by the like arising from the hoof, which it mutually receives.

*Inside of the left lower Limb.*

*a* The tendon of the rectus cruris.

*b* Vastus internus.

*c d* Sartorius.

*e e f* Gracilis.

*g h k l* Semi-tendinosus; *g* the fleshy part; *k l* the tendon which is inserted into the tibia at *k*; at *l* it sends off a tendon to the gemellus, to which, at *o*, the fasciæ are attached.

*m m m* Gemellus; *m* a fleshy part; under *n* lies the tendon over which the tendon of the plantaris is twisted.

*n* A tendon formed by that going off from the semi-tendinosus at *l*, and by another tendinous fascia.

*o p q r s* The fasciæ which are inserted into the os calcis, gemellus, and plantaris; *o* the place where the fascia lata is cut off; *p* the part going to be inserted into the os calcis on the external side; the part *q* joins with the part *r* to be inserted into the os calcis at *s*.

*t u v w x* The tendon of the plantaris coming from under the fascias and twisting over the gemellus at *t*; *w* a part which it sends off to the os calcis, which makes a sort of ligament to bind in the tendon of the flexor digitorum pedis; it is spread a little upon the ligament 899, and inserted into it near its origin from the os calcis about 8.

*y* The tendon of the flexor digitorum pedis lying under the thin ligament mark 35 on the right leg in this table; the bounds of it are here marked, though it falls off gradually into nothing more than a common membrane, and is insensibly lost as it descends from about *y*; the lowest part of its insertion into the splint bone is about *y*, but is here hid by the blood-vessel.

*z 1* The tibialis anticus appearing under the fascia.

2 3 3 The ligament marked 24 25 25 33 36 in this table of the right leg; 3 3 its insertion into the tibia.

4 The ligament marked 30 on the right lower limb in this table.

5 A ligament which covers the tendon of the tibialis posticus, arising from the posterior and inferior part, or internal inferior angle, and inserting itself into the articular ligament 99.

6 6 7 A ligament arising at 7 from the astragalus, and inserted at 6 6 into a cartilage lying under the tendon of the flexor digitorum pedis,

which, assisted by another ligament on the other side the limb, confines it in its place. These ligaments seem to be a part of the fascia which covers the muscles on the external side of the limb, which (passing under the tendon of the flexor digitorum pedis) forms a cartilaginous substance as it passes, and is a smooth proper bed for that tendon to slide upon.

8 9 9 A strong ligament which binds the os calcis to the astragalus, os naviculare, ossa cuneiforma, and splint-bone, arising from a protuberance about 8, and inserted into the other bones of the tarsus and metatarsus about 99.

9 9 The articular ligament which binds the tibia to the bones of the tarsus.

10 11 A ligament running over the tendon of the plantaris; inserted into the ligament 899, and splint-bone. It is marked 35 on the right leg in this table.

12 12 12 A sort of ligamentous fascia, betwixt which and the burfal ligament the mucilaginous glands are contained.

13 The ligament proper to the tendon of the extensor longus digitorum pedis, marked 26 in the right limb in this table.

14 15 16 17 The tendon of the extensor digitorum, at 14 going to be inserted into the last bone of the toe, or coffin bone: it receives the ligament 19 at the part 16, and the ligament 20 at the part 17; and, in its passage down to the toe, it adheres to the burfal ligaments under 21 and 20. It is marked 5 in table the 4th.

18 Interosseus, &c.

19 The ligament marked *d* in table the 4th. It arises from the interosseus, &c. and is inserted into the tendon of the extensor longus digitorum pedis, and binds it down.

20 A ligament which arises from the internal-lateral and inferior part of the first bone of the toe, and is inserted into the tendon of the flexor digitorum pedis, and binds it to this side, as 46 on the right lower limb, doth the same tendon on the other side.

21 Vena saphena.

22 Nervus sciaticus internus.

23 Nervus plantaris internus.

24 Vena plantaris interna.

25 26 The horny part of the hoof; 25 the superior part; 26 the sole or inferior part going under the coffin bone.

27 A substance resembling the villous surface of a mushroom arising from the coffin bone, received by the like arising from the hoof, which it mutually receives.

*In the left upper Limb.*

*c* Part of the biceps which sends an expansion over the bending muscles lying upon the cubit.



*def* The expansion marked *mnoopPqrsst* on the left upper limb in this table.

*gg* The fascia marked *aAbcdeegh* on the left upper limb in this table.

*h* The tendon of the muscle which is analogous to the extending muscles of the thumb, marked *g* on the right upper limb in this table.

*iklm* The ligament marked *16bbxyu* on the left upper limb in this table: the articular ligament appears under this: from *k* to *l* this ligament communicates with the fascia *def*.

*no* A ligament arising at *n*, and inserted, about *o*, like the ligament marked *12* on the right upper limb in this table.

*p* The ligament marked *3* on the right upper limb in this table. It is a continuation of the ligaments marked *no* on the right, and *12* on the left upper limb in this table, it is here something thinner than the ligaments *no* and *12*, but as it descends down the limb is soon insensibly lost in a membrane.

*q* The tendon of the profundus.

*r* The tendon of the sublimis.

*s* A vein arising from under the hoof, called vena plantaris interna.

*t* Nervus plantaris internus.

*wx* The tendon of the extensor digitorum communis; *w* the part which is sent off from the principal tendon to be inserted into the superior and internal part of the great pastern; *x* the principal tendon inserted into the coffin bone, but in its way is attached to the coronary bone on its anterior and superior part.

*y* A ligament which arises from the interosseus, &c. and is inserted into the tendon of the extensor digitorum communis, which it binds down.

*z* The interosseus, &c.

*12* The horny part of the hoof; *1* the superior part; *2* the sole or inferior part going under the coffin bone.

*3* A substance resembling the villous surface of a mushroom arising from the hoof, received by the like arising from the coffin bone, which it mutually receives.

Explanation of Pl. III. exhibiting a view of the *Muscles, Fascias, Ligaments, Nerves, Arteries, Veins, Glands, and Cartilages*, of the HORSE.

#### *In the Head.*

*ab* The elevator of the upper eye-lid, so thin and transparent that the dark-coloured part appears through at *a*, and the white at *b*.

*c* The lachrymal gland.

*d* The under eye-lid.

*ee* The tarsi ligamentum ciliare, or ciliary edges.

*f* Alæ narium.

*ghii* A muscle arising by a small tendon at *h*, and by a flat membranous tendon at *ii*; it is inserted near *g* into the pituitary membrane which covers the concha narium inferior: it has another insertion into the alæ narium.

*k* The septum narium.

*mmn* Caninus or elevator of the corner of the mouth; *mm* its insertion from the corner of the mouth along the buccinator.

*oo* Orbicularis oris.

*pqr* The depressor of the lower lip.

*ss* Buccinator.

*t* The anterior dilator of the nostril.

*u* The elevator of the chin.

*w* The masseter.

*1* Vena jugularis externa, posterior or superior; in a branch of which at

*22* Are two valves, anastomosing between the anterior and posterior external branches of the jugularis.

*3* Vena temporalis.

*4* Vena angularis.

*5* Arteria angularis.

*678* Nervus maxillaris superioris; the second branch of the fifth pair of nerves; *7* branches going to the upper lip; *8* a branch which goes to the long nasal muscle of the upper lip.

*9* Branches of the nervus maxillaris inferioris; they are branches of the third branch of the fifth pair of nerves; they communicate with the nervus maxillaris superioris.

*10* Glandulæ labiales, part of which are cut away to shew something of the spreading of the nerves of the lip.

*11* The salivary duct.

*12* The anterior cartilage of the outer ear.

*13* The outer ear.

#### *In the Neck.*

*abcde* Caraco-hyoidæus; *b* the part coming from its origin at the upper and internal side of the humerus, betwixt the insertions of the sub-scapularis and teres major, by a flat membranous tendon, beginning to be fleshy as it comes from under the serratus minor anticus; *c* fibres which run towards the angle *d*, attached to the rectus anticus major, and having an origin by a flat tendon along with the insertion of that muscle from the os iphenoides; *a* fibres which intersect the wind-pipe, going from the part *cd* towards *e*, to be inserted into the os hyoides.

*fg* Sterno-hyoidæus arises at *f* from the middle tendon of the sterno-thyroideus, and goes, at *g*, along with the caraco-hyoidæus to be inserted into the os hyoides.

*bik* Sterno-thyroidæus; *b* its middle tendon;

*i* the fleshy part coming from its origin at the superior and internal part of the sternum. It runs close along with its fellow a little higher than the part *b*, where it is tendinous, from whence it goes to be inserted at *k* into the thyroid cartilage about three minutes from its fellow.

*l* Part of the carotid artery; at *l* goes off a branch to the sterno-thyroidæus.

*m* Nerves of the eighth pair.

*n* The thyroid gland.

*oooo* Glandulæ lymphaticæ.

*q* The lower constrictor of the pharinx.

*r* Hyo-thyroidæus.

*s* Crico-thyroidæus.

*t* Crico-arytenoidæus posticus.

*u* The inferior maxillary gland.

*wxy* Rectus internus major capitis, or rectus anticus longus; *w* its origin from the transverse process of the third vertebra of the neck; *x* its origin from the transverse process of the fourth vertebra, and a part of the scalenus. It is inserted into the os sphænoides.

ABCDEFGH, Transversalis cervicis; AB the superior part, which arises from the third, fourth, fifth, sixth, and seventh oblique processes of the neck, and two uppermost of the back, viz. the lower oblique processes of the third, and upper oblique processes of the fourth, and so of the rest: it is inserted into the transverse process of the first vertebra of the neck. CDEFGH the inferior part which arises from the transverse processes of eight of the superior vertebrae of the back, and is inserted into the transverse processes of the four inferior vertebrae of the neck, partly fleshy, but chiefly by broad thin tendons, as at DEFGH. Between the superior part AB and D the inter-transversales appear. At the extremity of its origin it is spread out about three inches by a flat tendon expanded from its first origin from the eighth transverse process, to the broad tendon of the complexus to which it is strongly attached, and from the whole breadth of which fleshy fibres arise.

IKL Trachelo-mastoidæus, complexus minor, or mastoidæus lateralis; I the tendon, going to be inserted into the root of the processus mastoidæus; KL the fleshy part arising from the oblique processes of the third, fourth, fifth, sixth, and seventh vertebrae of the neck, the uppermost of the back, and transverse processes of the second or third vertebrae of the back.

MOOPPPQST Complexus; M shews some external appearance of the principal tendon towards which the fleshy fibres are directed as marked PP, &c. OO tendinous lines by

which the carnosus fibres PP, &c. are intersected; Q a tendinous origin from the ligamentum colli; S the part going to be inserted by a strong round tendon into the occiput near the insertion of its fellow; at T are marked the directions of some tendinous threads which attach it to the ligamentum colli.

It takes its origin from the upper oblique process of the third vertebra of the neck, and continues its origin from all the oblique processes of the neck below that, and from the upper oblique process of the first vertebra of the back, and, by a pretty strong flat tendon, from the transverse process of the second and third vertebrae of the back; from the last of which the tendon is reflected from the transverse process to the top of the spinal process of the same vertebra, and makes a communication betwixt this part of the muscle and that arising from the third, fourth, fifth, sixth, and seventh spinal processes.

UU Obliquus capitis inferior.

WW Obliquus capitis superior.

XY Longus colli.

IIIIII 22222 Branches of the cervical arteries and veins.

3 Part of the jugular vein.

#### *Muscles on the Shoulder.*

*ab* The subscapularis, which is outwardly tendinous; at *a* is marked a membranous tendon, from which the supra spinatus receives some part of its origin; *b* marks a tendinous slip sent from this muscle which leaves it about *a*, and is inserted into the coracoid process a little below *b*.

*cdecefgb* Triceps extensor cubiti; *cdece* the head, which is called extensor longus major, arising at *eee* from the inferior costa scapulae; *c* makes the traces of the teres minor; at *d* are left some strong tendinous threads belonging to the infra-spinatus scapulae which adhere to this muscle; the marks of the infra-spinatus appear all the way from *d* to the humerus; *f* the origin of that part called extensor brevis from the humerus; *g* the head called brachialis externus longus minor.

*ijklmn* Biceps brachii, or rather coraco-radialis; *ii* the tendon arising from the scapula; *k* a fleshy part lying upon the tendon; *l* the belly of the long head; *m* the belly of the short head; *n* the aponeurosis arising from this muscle, which it sends to the tendinous fascia or covering of the cubit.

*o* Nervus cubitalis.

*p* Nervus radialis.

*q* Nervus muscululus cutaneus.

*r* Nervus medianus.



- s* Branches of the arteria and vena axillaris.  
*t* A branch from the arteria axillaris.

*In the Trunk.*

*aabbbcd* Serratus minor posticus; *aa* the beginning of the fleshy fibres; *bbb* the flat tendons by which it is inserted into the ribs; *aac* the fleshy part; *d* the flat tendon by which it arises. In this subject this muscle runs fleshy under the serratus major posticus, and is inserted into the twelfth, thirteenth, and fourteenth ribs. Its first or superior insertion is into the fifth rib.

*eeefghh*, &c. Serratus major posticus; *eeefg* its broad tendon; from *g* to *f* is marked the place where the tendon of the latissimus dorsi is cut off from its insertion with this tendon into the fascia lata; *eehh*, &c. the fleshy part; *ee* the beginning of the fleshy part; *h* its insertion into the ribs which in some subjects is only into seven inferior ribs, as in this subject, though, as here, it is more frequently inserted into eight.

*l* Serratus major anticus.

*mm*, &c. *nnnoo*, &c. *pp*, &c. *qq*, &c. *rr*, &c. Intercostals; *kmi* mark the origin of the external oblique muscle from the ribs, where they are described by shaken lines; the same kind of line marks also where they unite with the intercostals, or arise from the tendinous covering of the intercostals; *oo*, &c. mark the parts of the external intercostals which are above and below the insertion and adhesion of the external oblique muscle; *pp*, &c. some appearances of the internal intercostals: out of these places come nerves and blood-vessels which go to the external oblique muscle; *qq*, &c. some fleshy fibres which arise partly externally tendinous but chiefly fleshy, and run in a transverse direction from one rib to another. They belong to the internal intercostals *rr*, &c. Fleshy fibres which run in the same direction of the internal intercostals from one cartilaginous ending of the ribs to another. Betwixt most of the ribs there are marked blood-vessels and nerves, some of which go to the external oblique muscle, they are called intercostales.

*ssstuuquxy* Obliquus internus, or ascendens abdominis. It arises at *ss* from the spine of the ilium tendinous and fleshy, its origin is continued to the ligamentum Fallopii, from which it arises, and from the symphysis of the os pubis: it is inserted into the cartilage of the lowest rib tendinous and fleshy, and into the cartilaginous endings of the ribs as far as the cartilago ensiformis; *ssstuuw* the fleshy part ending at *uu*: the nerves and blood-vessels which are seen on this part of the muscle pass to and from the external oblique muscle and parts which are taken off; *xy* the flat tendon; that part of the

tendon which runs over the rectus is cut off from *t* to *y*.

*z* Rectus abdominis: it arises from the os pubis, and is inserted into the cartilago ensiformis and into the cartilages of the third, fourth, fifth, sixth, seventh, eighth, and ninth ribs, and into the sternum betwixt the cartilages of the third and fourth ribs; there are fleshy fibres arising from the first rib which join it at its origin from the sternum. This is called a distinct muscle, and named musculus in summo thorace situs.

The blood-vessels and nerves which are marked on the thorax are those which are distributed to the parts taken off, as the obliquus externus, latissimus dorsi, membrana carnosæ, &c. and integuments; the nerves come from the nervi dorsales or costales, and nervi lumbares; the arteries from the arteriæ intercostales inferiores, and the arteriæ lumbares, the veins from the venæ intercostales and venæ lumbares.

*In the Cubit and right upper Extremity.*

*abcd* Extensor carpi radialis; *a* its origin from the superior protuberating part of the humerus; *b* the part which arises fleshy from the fascia which is extended betwixt the two external protuberating parts of the os humeri; it arises above the part *b* and ligament or fascia from the external ridge of the external condyle all the way up as far as the brachialis internus does not cover, but its most considerable origin is from the anterior part of the external condyle of the os humeri, from which place it continues its origin into the great cavity on the anterior and inferior part of the os humeri; from whence it arises by a very strong tendon firmly adhering to the tendon of the extensor digitorum communis; *abc* the fleshy part; *dd* the tendon inserted into the metacarpal bone, at *d* adhering to the bursal ligament a little before it reaches the lower bone of the carpus, or about three minutes from its insertion into the metacarpal bone; *c* marks the place where the fascia, proper to the extending muscles on the cubit, is cut off from the fascia of the biceps muscle *nc*, which it joins to be inserted along with it into the tendon of the extensor carpi radialis.

The origin of this muscle is as extensive as the originations of the long supinator and radialis longus and brevis, and may be called a combination of all three in one, which is assisted by the biceps, the fascia of which is like a strong flat tendon, inserted into the tendon of this muscle.

*f* The muscle which is analogous to the extensor of the thumb in the human body; *f* the fleshy part arising from the lateral part and

ridge of the radius; *g* the tendon going to be inserted into the false metacarpal bone or lost in the ligament inserted into that bone, or rather attached to it before its insertion. It is a combination of the abductor pollicis manus, extensor longus, and extensor brevis pollicis manus and indicator.

*hiklmn* Extensor digitorum communis; *h* its origin from the external condyle of the humerus; *i* the origin it receives from the fascia which is extended betwixt the two external protuberating parts of the os humeri: it is a strong membranous tendon: *h* its origin from the upper and lateral part of the radius; *k* the fleshy belly; *m n* the tendon; *n* the part inserted into the coffin bone; *m* the tendon which it sends off to the tendon of the extensor minimi digiti. Its principal origin is by a flat strong tendon from the lateral anterior and lower part of the os humeri, from the cavity above the articulation under the extensor carpi radialis, to the tendon of which it adheres for about three minutes from its beginning, as well as to the burfal ligament which lies under it.

ooo Ligamentous fascias.

*pqrs* Extensor minimi digiti; *p* the part arising from the superior part of the radius. It has an origin from the ulna. The part marked with shaken lines from *p* to *q* receives a fleshy beginning from the vagina or case which binds together the bending muscles on the cubit. *rs* Its tendon, which is joined by the slip from the extensor digitorum communis *m*, to be inserted at *s* into the first bone.

*tuvwxyz* Flexor carpi ulnaris; *t* the origin of its external head from the external protuberance of the os humeri posteriorly; *u* the internal head which arises from the internal protuberance of the os humeri: it is inserted into the external false metacarpal bone a little below *w*, and at *x* into the pisiforme bone; *y* the tendon; *z* the fleshy parts.

123 The profundus arises by four distinct heads, 3 is the common tendon of the four heads; the head 1 arises from the internal protuberance of the os humeri posteriorly under, and in common with, the sublimis, with which it seems to be confounded, in some degree, all the way down the fleshy part till it comes to the tendon where the four heads unite, and then the profundus and sublimis make two distinct tendons; the next head arises under that from the same protuberance by a small flattish tendon, it soon swells into a round fleshy belly, then gradually tapering becomes a round tendon, joins in with the tendon of the first described head a little above the projecting pisiforme bone of the carpus; the next head,

marked 2, arises fleshy from the ancon near its extremity, and soon becoming a small long tendon joins in as the former; the fourth head arises fleshy from the flat posterior part of the radius about its middle, and first becoming tendinous joins in with the other heads about the same place.

There is a strong tendinous ligament arising from the projecting pisiforme bone, and another of the carpal bones inserted into the tendon of the profundus: it arises from all the internal face of the carpus: there is such a ligament arising from the internal edge of the radius, which is inserted into the sublimis about the same place, where the four tendons of the profundus unite.

5 Interosseus, &c.

6 A ligament from the interosseus to the tendon of the extensor digitorum communis.

88 The burfal ligament belonging to the anterior part of this joint.

9 The articular ligament.

10 The tendon of the sublimis.

11 Nervus plantaris externus.

12 Vena plantaris externa.

13 The villous covering of the coffin bone is here left on to shew its thickness.

#### *In the right lower Limb.*

*aaabbbddd* Glutæus medius; *aaa* its origin from the sacro-lumbalis; *bbb* an origin from the fascia lata; *c* an origin from the ilium; below *bbb* is covered by the glutæus externus and biceps cruris; *dd* its insertion into the great trochanter. Its origin is continued from *c* to the posterior part of the spine, and all that space of the ilium which lies betwixt the spine and the glutæus internus partly tendinous but chiefly fleshy, and from the ligament which goes betwixt the ilium and the transverse processes of the os sacrum.

*e* Iliacus internus arises fleshy from all the internal cavity of the os ilium and inside of its anterior spine; it is joined by the psoas magnus, and with it inserted into the lesser trochanter. They seem to be but one muscle.

*f* Large arteries and veins which go to the musculus membranofus, and in betwixt the rectus and vastus externus. They are part of the first ramus of the pudica communis.

*gbiik* Rectus cruris; *g* the part coming from its origin from the external or posterior part of the inferior spine of the ilium of one tendon, and by another from the anterior part of the same spine; *b* its fleshy belly; *k* its insertion into the patella.

*nopqrrs* Vastus externus; *o* its origin from the posterior part of the great trochanter; *p* an



origin from the anterior side: they are both externally tendinous: *rr* its insertion into the patella; *rs* its insertion into the lateral ligament of the patella; *u* its principal fleshy part; *q* the thin fleshy part which goes to the lateral ligament, and over which the anterior part of the biceps goes to be inserted into the patella at *rruu*.

*rruuw* The insertions of the anterior part of the biceps; *rruu* that into the patella; *w* that into the tibia.

*yz* The inferior ligament of the patella, inserted at *y* into the patella, and at *z* into the tibia.

*12* The lateral ligament of the patella, inserted at *1* into the patella, and at *2* into the os femoris.

*34* The burfal or capsular ligament of the knee.

*5* The place where the tendon of the glutæus externus is cut off from its insertion.

*6* The place where the expansion is cut off which it sends to the pyramidalis.

*8888* The ligament which runs from the spinal to the transverse processes of the os sacrum, upon which is marked the fleshy origin of the biceps.

*889 10* The ligament which runs from the transverse processes of the os sacrum to the ischium, on which is marked the fleshy origin of the biceps cruris.

*89* Shews the place where the fascia lata is cut off betwixt the biceps and semi-tendinosus.

*99 11* The origin of the biceps from the tubercle of the ischium; *99* that from the end; *9 11* that from the inferior edge, where there is a little of the flat tendon left on to shew its breadth.

*12 13 14 15 16* Blood-vessels; *12* an artery; *13* a vein, the branches of which, *15* and *16*, run to the semi-tendinosus, the branches *14* to the biceps. The artery is a branch of the first ramus of the pudica communis, which is a branch of the internal iliaca or hypogastrica; the vein is a branch of the vena hypogastrica.

*18* Blood-vessels which go to the semi-tendinosus; the superior is an artery, the other a vein.

*19 20 21 22 23 24 25 30* Extensor longus digitorum pedis; *19* an origin from, or an attachment to, the tibia; *20* its origin from the femoris along with the tendon of the tibialis anticus inseparably joined to that strong tendon; *22 23 24 25* its tendon running under the ligament *26*; *21* its fleshy belly; at *22* it is joined by the tendon of the peronæus; at *23* it is

joined by a ligament from the interosseus, &c. which binds it down to the great pastern; the principal part of the tendon *24* goes to be inserted into the coffin bone, where it is joined by the tendon of the peronæus; it sends off a slip to be inserted into the first bone of the toe or great pastern at *30*.

*26* A ligament which binds down the tendon of the extensor longus digitorum pedis.

*27* Extensor brevis digitorum pedis.

*28 29* The tibialis anticus; *28* its origin from the superior and anterior part of the tibia; it arises also by a very strong tendon from the inferior part of the os femoris, and is inserted into the bones of the tarsus and metatarsus. It is more fully explained in a subsequent plate.

*31 31 32 33* Semi-membranosus arising tendinous, and at its origin attached to the origin of the biceps at *31 32*; at *33* it is joined in with the semi-tendinosus, and is with it inserted into the tibia.

*34 35* The inferior part of the semi-tendinosus cut off at *34*; at *35* it sends off an expansion attached to the tendinous ligament which lies over the gemellus, and covers some blood-vessels and nerves which pass over the gemellus, and run down the leg: it is also inserted by a flat tendon or expansion into the plantaris near the bottom of the fleshy part, through which expansion there is an opening for the passage of a large nerve. Its principal insertion is by a flat tendon into the superior and anterior part of the tibia internally.

*15 36 36 37 38 39 39 40* The large adductor of the thigh; *15 36 36* shew the fleshy origin of the semi-tendinosus from the flat tendon of this muscle or ligament running from the sacrum and coccygis to the ischium; *15 39* mark the place where the semi-tendinosus ceases to arise from this tendon or ligament on this side, and where the fleshy fibres of this muscle begin to arise on the other side of the tendon; at *37* and *38* the surface is tendinous, but strongest about *37*, where tendinous fibres run as marked in a transverse direction from the ligament or fascia lata; *39 39* the place where the expansion is cut off which is sent from the fascia lata before it runs in betwixt the biceps and semi-tendinosus; *40* the external fleshy part of this muscle. The fascia sending off an expansion before it goes in betwixt the biceps and semi-tendinosus, which is fixed to the large adductor of the thigh at *39 39*, and this fascia being attached to the edge of the broad tendon of this muscle or running over it, as at *37*, makes a complete case for the semi-tendinosus above the process of the ischium, which keeps it firmly in its place. This muscle arises from the ligament

running from the sacrum and coccyx to the ischium; its principal origin is from the tubercle of the ischium; it is inserted by a strong tendon into the internal condyle of the humerus behind the origin of the articular ligament, and a little below it; and by a flat tendon into the articular ligament and tendon of the semi-tendinosus. It joins in with the long adductor near its insertion.

50 51 52 53 Peroneus; 50 its origin from the upper part of the fibula and articular ligament 54; 51 its fleshy belly; 52 53 its tendon joining in with the long extensor of the toes at 59, part of which is inserted into the great pastern along with part of that tendon at 30.

53 59 Flexor digitorum; 58 the fleshy part; 59 the tendon.

60 60 61 62 63 64 Gemellus; 60 60 a sort of flat tendon which may be easily separated from the muscle to which it only adheres by its external edge: it runs over the surface of the muscle, and joins in with the fascias sent from the semi-tendinosus, &c. which joins in both above and below, and by that means makes a case for the tendon of the gemellus and plantaris; 61 the externally tendinous origin of the external head of the gemellus; 62 62 the fleshy parts; 63 the fleshy part under the expansion 60; 64 the tendons of the external and internal head of the gemellus; that upon which the 6 lies is the tendon of the internal head, and that which the 4 lies on is the tendon of the external head; the tendon 60 wraps over it a little above 6 to be inserted more internally into the os calcis; so that these three tendons, along with that of the plantaris, are twisted like a rope.

68 69 The tendon of the plantaris, wrapping over the tendon of the gemellus at 68. This muscle arises under the external head of the gemellus (in which it is in a manner wrapt up) out of the large fossa or notch in the os femoris: above the external condyle on the external side of its fleshy belly the gemellus is attached to it by fleshy fibres; at 68 it runs over the end of the os calcis, where it is bound on each side by ligaments which prevent its slipping either way; at 69 it divides to be inserted on each side of the inferior part of the great pastern posteriorly, and to give passage to the tendon of the flexor digitorum pedis, to which tendon it serves as a ligament to confine it to the great pastern when the fetlock joint is bent, and by that means it receives assistance from that tendon in bending the fetlock joint. This is analogous to the plantaris and short flexor of the toes in the human body, viz. the part above 68 to the plantaris, and the part below to the short flexor of the toes.

70 71 71 Articular ligaments; 70 that which binds the tibia to the bones of the tar-

sus; 71 71 that which binds the os calcis to the splint bone.

72 A capsular ligament.

74 75 Interosseus, &c. it arises from some of the tarsal bones and the upper part of the metatarsal bones, and is inserted into the sesamoid bones and great pastern on each side; it sends off the ligament 75 and another on the other side to bind down the tendon of the extensor digitorum pedis. This is of a ligamentous nature, but supplies the places of the interosseus, the short flexor, adductor, and abductor of the great toe, the abductor and short flexor proper to the little toe, and a ligament which arises from the calcaneum and belongs to the cuboid bone, but sends off an excursion which joins the origin of the short flexors of the little toe in the human body: the ligamentous aponeurosis 75 is sent partly from the interosseus, &c. and partly from the capsula of the fetlock joint of the tendon of the extensor digitorum pedis.

76 Arteria tibialis anterior.

77 A vein from the biceps cruris on which appears a valve. It is a branch of the obturator. It is accompanied with a nerve.

81 A large vein, on which several valves are marked.

82 A nerve which accompanies the vein 81 to go under the fascia 35, and which is marked 9 in the 4th plate. It is a branch of the large crural nerve.

83 Nerves going to the tibialis anticus. They are some of the small sciatic ramus.

84 The external nervus plantaris.

85 The external vena plantaris.

86 A substance which resembles the villous surface of a mushroom, marked 13 and 3 in plate the second, is here left to shew its thickness or depth: it is the same on all the feet.

#### *Inside of the left lower Limb.*

A a The tendinous surface of the rectus cruris, inserted at A into the patella.

b b c 12 Vastus internus, inserted at b b into the patella; at A a into the rectus; and at 12 into the ligament 13 14.

d The long adductor of the thigh.

e A flat tendon of the fascia from the large adductor of the thigh.

f g Gemellus; f the fleshy belly, the external surface of which is tendinous at f; the tendon of this internal head wraps over the tendon of the plantaris to go to the external side of the heel: g the tendon of the external head.

b The tendon of the soleus.

l m n n p r The tendon of the plantaris; l the



part marked *t* in table the second; *m* the part marked *u* in table the second; *nn* the part marked *s*, the part marked *qr* in table the second, being here cut off at *p*; the part marked *w* in table the second is cut off in this place; *r* the tendon on this side going to its infertion into the first bone of the toe.

*uvwx yz* 30 The extensor digitorum pedis; *u* the fleshy part, marked 21 on the right limb in this table; *w* the part marked 22 on the right limb in this table; *x* the part marked 24 in this table on the right lower limb, and 14 in table the second on the left limb; *y* the part marked 16 in table the second; *z* the part marked 17 in table the second. It has an infertion at 30 into the great pastern with part of the tendon of the peronæus.

*z* The ligament marked 20 in table the second.

1 2 3 Tibialis anticus.

6 Popliteus: externally tendinous, particularly near its infertion.

7 Tibialis posticus.

8 8 Flexor digitorum pedis.

9 10 The burfal ligament.

11 The intermuscular ligament marked 26 on the left limb in this table.

12 13 14 The internal anterior ligament which binds the patella to the tibia.

15 15 15 A membranous covering of the burfal ligament; betwixt which and the burfal ligament are contained in the mucilaginous glands of this joint,

16 The internal articular ligament which connects the os femoris to the tibia.

18 18 The articular ligament which binds the tibia to the bones of the tarsus.

22 23 23 The ligament marked 8 9 9 in table the second. It is a strong ligament which binds the os calcis to the astragalus, os naviculare, ossa cuneiformia and splint bone, arising from a protuberance about 22 and inserted into the other bones of the tarsus and metatarsus about 23 23.

25 A nerve called sciaticus internus.

26 The ligament marked 19 in table the second.

27 Interosseus, &c. marked 18 in table the second.

28 Nervus plantaris internus. It is a branch of the nervus sciatica-tibialis.

29 Vena plantaris interna.

36 The villous covering of the coffin bone, is here left on to shew its thickness.

*Inside of the left upper Limb.*

*abc* Extensor carpi radialis, marked *abcd* on the right upper limb in this table; *a* the

fleshy belly; *bc* the tendon; *c* its infertion into the metacarpal bone.

*d* A ligamentous fascia.

*e* Profundus.

*fg* The muscle which is analogous to the extensor of the thumb, marked *fg* on the left upper limb in this table.

*b* The tendon of the extensor digitorum communis.

*i* Nervus medianus.

*k* Arteria brachialis, or the humeral artery.

*llmm* The burfal ligament on the anterior part of this juncture.

*n* Flexor carpi radialis.

*o* Sublimis.

*p* Flexor carpi ulnaris.

*q* Interosseus, &c. It arises from the bones of the carpus and upper part of the metacarpal bones, is inserted into the sesamoid bones and great pastern on each side, and sends off the ligament *r* on this side to the tendon of the extensor digitorum, which it binds down. It is of a ligamentous nature, but supplies the places of the interossei manus and abductors of the fore finger, little finger, and short abductor of the thumb, with the adductors of the thumb and little finger in the human subject.

*s* Vena cephalica.

*t* Vena plantaris interna.

*u* Nervus plantaris internus.

*w* The villous covering of the coffin bone is here left on to shew its thickness.

ANBURY, or AMBURY, a name given by our farriers to a kind of soft and spongy swelling, growing on the bodies of horses, somewhat fore to the touch, and full of blood. The method of curing it is, to tie a horse hair very hard round it at the root; in about a week after this, it will fall off, and the part is then to have some powder of verdigrise strewed upon it, to prevent the return of the complaint, and finally to be healed up with the common ointment of rosin.

This is the common method when the anbury is high and prominent; but sometimes it is flat and low, with a broad base: in this case, it is impossible to take it off by ligature, and there is a necessity of having recourse to a severer operation; it must, in this circumstance, be taken away, either by the knife or fire: if the former way be agreed on, the method is this; the skin is to be drawn back tight, and then the whole swelling cut off close to the common level of the rest of the flesh; if in the other way, an iron is to be heated red hot, and applied to it, continuing it on till the whole is burnt down to the even flesh. In both cases, care must be

taken not to spare in the cutting or burning, so as to leave any root behind, for then the complaint will be renewed. When it is taken off, the common ointment of hog's-lard and turpentine will complete a cure. There are some circumstances, however, in which the knife and cautery may be both improper, as if it grows in a sinewy part, or the like. In this case, the proper method is to eat out the core with oil of vitriol, or white sublimate, and then stop the hole with flax dipped in honey, and lime unslaked. Some, for the first day or two, dip it only in the white of an egg, and after that in the mixture of quick-lime and honey; and this seems to be the better way, as *Markham* asserts. Some have boasted of a caustic which infallibly cures all protuberances of this kind, the preparation of which is this: Take three ounces of green vitriol, and one ounce of white arsenic; beat them to a coarse powder, and put them into a crucible; place the crucible in the midst of a charcoal-fire, stirring the substance, but carefully avoiding the poisonous steams; when the whole grows reddish, take the crucible out of the fire, and, when cool, break it, and take out the matter at the bottom; beat this substance in a mortar, and add to four ounces of the powder, five ounces of soft soap; make the whole into an ointment, and let it be applied cold to warts, rubbing them with it every day; they will, by this means, fall off gently and easily, without leaving any swellings. It is best to keep the horse quiet, and without working during the cure. What fores remain on the parts where the swellings fall off from, may be cured with any common ointment or poultice.

**ANCHYLOSIS** (from *αγκυλος*, *crooked*): it is also called *ancyle*, *ancylefis*, *anchyle*, a STIFF JOINT, a species of which is called *orthocolon*. Some distinguish this disorder thus: *ancyle* is when the bones are immoveable, and the joint in a bent position; but if the limb is straight, and cannot be bended, it is named *orthocolon*. Others divide this case into the true and false; the true are such wherein the bones are united so as to become as it were one; the false is when, from the tendons being contracted, or other parts about the joint are diseased, the limb is rendered immoveable.

The bones are covered at their ends, where they form joints, with cartilages, to facilitate their motion, and to prevent any farther production of bone; and if these cartilages should be eroded, there will be an excrescence consequently thereon, which will produce this disorder: however, it is sometimes the cure of a worse disease.

The general causes are, a caries, abscesses in the joints producing caries, ossification of the ligaments, strumous disorders, contraction of the tendons.

When the bones are united, the cure is impossible; and whatever else is the cause, the cure is very uncertain, on account of the difficulty of coming at the seat of the disease; and, indeed, often from the difficulty of knowing what part about the joint is the part primarily and principally affected, or even in any degree the cause.

**ANEURISM** (from *ανευρυσμ*, to dilate much; and that from *ανα*, *asunder*, and *επι*, *broad*): called also by old medical writers, *Hematocoele arteriosum*, *abscessus spirituosus*, *emborsina*.

The *aneurism* is a tumor, arising from the dilatation or rupture of the coats of an artery. Arteries only are the seat of this disorder; and any artery, in any part of an animal, may be thus affected, as any vein may be the seat of a varix. Whether cattle of any description are liable to this disease, so formidable in the human subject, our books of farriery do not ascertain. By the fairest analogy, however, we may suppose it possible; or at least that an aneurism may be produced, if not spontaneously, at least by *accidental violence*. We might divide *aneurisms* into four kinds; viz. the *true*, the *false*, the *mixed*, and the *varicose*. Of the *first*, or TRUE ANEURISM, however, we shall only treat here.

The true *aneurism* is formed by a dilatation of the artery. It may happen in any part of the body, but most frequently is found in the curvature of the aorta, which is subject to this disorder from the extraordinary impulse of the blood there. From the curvature it runs upwards along the carotids, or the subclavians, generally increasing, till by its great distension it is ruptured, and the patient dies.

The degrees of the dilatation of the aorta, in cases of this kind, are various; in some the curvature of this artery hath been so enlarged as nearly to fill the upper part of the breast. And what is peculiar, and deserving our attention, is, that the part of the vessel which is the weakest, and where the disease begins, is apt to be stretched more in proportion than other arteries, and to form particular cells, where they meet with firm resistance, more than where their support is soft and yielding.

The sac formed by the distension of the artery is not a distension of a particular coat, but of the whole substance of the vessel: but the thickness of the coats of these sacs will last only to a certain period; for when the vessels of the coats can no longer conform to the extension, the circulation grows languid, the sac becomes



thinner at its apex, and soon after bursts : farther, as the *aneurifmal* tumor increases in size, it meets with resistance from the neighbouring parts ; and as the coats will be more or less affected ; according to the degree of the resistance, in some places they will be simply distended, in others absolutely destroyed ; e. gr. where the *aneurifm* presses against the diaphragm, it will be thinner than where it suffers no pressure ; it is still thinner where it presses against the tendinous part of the diaphragm ; and where it presses the spine, it is the soonest eroded through. A proof that pressure must be avoided in all instances of this sort.

The blood that fills these tumors is always fluid, by being constantly renewed ; that is, as fast as one drop enters, another passes out, and continues its course in the circulation ; but, notwithstanding this blood is fluid, its passage in the tumor is retarded, and this remissness in its motion, which is more or less considerable, according to the size of the *aneurifm*, occasions some of the coagulable parts of the blood to separate from the red part ; and adhering to the internal coat of the *aneurifm*, it there forms fibrous strata, which may easily be taken for real membranes by those not accustomed to observe them. These fibrous strata cannot be dispersed by any means, either external or internal, and pressure cannot be used, because thereby the coats of the artery are soon destroyed.

Aneurisms in the limbs are cured by making an incision, exposing the artery, and tying it above and below the tumor.

ANGEIOTOMY, an opening of the vessels, as in arteriotomy and phlebotomy. It also signifies a particular dissection of vessels for anatomical purposes.

ANGELICA, called also *imperatoria sativa*, *pectoraria herba*. It is the *angelica*, *archangelica foliorum*, *impari lobato*. Fructu, subrotundo angulato folido, stylis reflexis ; corollis æqualibus ; petalis incurvatis. CL. PENTANDRIA. ORD. DIGYNIA. Linn. Gen. Plant. 138.

*Garden Angelica*. It has the odd leaf at the end of each rib, and generally some of the others, cut into two or three lobes. It is found by the sides of rivulets, on the mountains of Lapland, and is cultivated in gardens all over Europe ; the best is said to be produced in Bohemia and Spain : but Linnæus says, that the best is that which grows on the mountains in northern countries. It is a biennial plant ; but if the stalks are cut down before it flowers, the roots send forth new heads, and may thus be continued for many years. The roots are in the greatest perfection in the second spring ; they should be well dried, and kept in a dry place, and fre-

quently aired, or they grow mouldy, and are the prey of worms. This plant is among the remedies formerly much employed both by physicians and farriers, under the title of alexipharmics. The English *angelica* was in as much esteem as the Spanish. Though all the parts of this plant possess the same virtues in a great degree, yet the root is the strongest. It resembles zedoary as a medicine, but is milder. It was externally applied, to discuss inflammatory tumors in cold habits. Its cardiac qualities seem alone to have dictated its use as an internal remedy for horses, cows, &c.

The feeds come nearest to the roots in point of medical virtue, but scarcely retain either their vegetative or medicinal power until the following spring.

Dale reckons up four species of *angelica* ; they have all similar virtues, chiefly differing in the degree, but the above is the best. The wild sort, formerly in use, is the *angelica sylvestris*, foliis æqualibus ovato-lanceolatis serratis.

ANGINA, the Quinsy. See ANTICOR.

ANGIOLOGY, that part of anatomy which treats of the glands, lacteals, lymphæducts, arterics, veins, and other vessels in an animal body.

ANGLE-BERRIES, excrescences to which cows, &c. are subject. Mr. Topham says they are mostly dry, cutaneous tumors, growing out above the surface of the skin ; being either hard or soft, greater or less, broad or long, complicated or entire.

They are supposed to proceed from a rupture of the cutaneous vessels, which give vent to a matter capable of forming a sarcoma, or fleshy excrescence. They frequently appear upon the abdomen, and adjacent parts, hanging pendulous.

These tumors differ greatly in their disposition, according to their different situations and magnitude, and the degree of sensibility of the part on which they appear.

Those that arise from a small base, and hang pendulous, as it were from a stalk, are commonly removed by a ligature fixed round their bases, and so gradually straightened, as the symptoms require it, until the excrescence begin to mortify or die away, by reason of the blood's passage being intercepted.

When angle-berries of a large base happen to be situated upon any joint, they ought to be treated with great caution, and also when situated near the tendons, cartilages, &c. for a caustic applied in too great quantity might do irreparable mischief.

When thus seated, the taking them off skillfully by incision is best ; but even this must be done cautiously, as instances have happened, where too free a use of the knife has caused

a loss of motion in the joint, or brought a flux of humours upon the part, so as to destroy the cartilage, and even the bone itself. Such an accident would render the remedy worse than the disease.

Mr. Topham gives the following directions: "If the base of a tumor of this kind," says he, "be large, fix a ligature round its base and draw it tight; then with a sharp and suitable knife, a small distance from the ligature, cut off the tumor or lump. After which blood will issue out of the vessels in proportion to their size and situation; which may be suppressed by an actual cautery, that is, a hot iron applied to the mouths of the bleeding vessels. Observe to have the part of the iron very smooth which is applied to the wound, and continue to apply the iron, absolutely hot, where the flux of blood issues out, till an eschar is formed over the vessels thick enough to resist the flux of blood. The ligature may remain on till the danger of bleeding is over."

The part may be poulticed once a-day, to bring the wound to discharge good matter, after which dressing it with common ointment will be sufficient.

If the neighbouring parts abound with small tumors of the same kind, rub them over two or three times with oil of vitriol and sweet-oil, of each equal parts, taking care not to spread the application to the sound parts.

If these tumors do not waste, or seem to die after a few applications, they may be cut off in the manner above directed.

The return of such tumors may be prevented by touching the roots of them with a little of the lapis infernalis, oil of vitriol, aqua fortis, or butter of antimony; or it may be sufficient to sprinkle a little red precipitate on the part.

ANGULAR, a term applied to certain blood-vessels which, in their course, form an *angle*. Examples will be found in the anatomical plates of the horse in this work.

ANIMAL (from *anima, life*). All bodies endowed with life and with spontaneous motion are called *animals*. Hence are animals distinguished in general from vegetables. But this gives us no perfect definition; for there are entire classes of animals which are fixed to a place; as the lithophytes, and zoophytes, which are produced and die upon the same spot; and, on the other hand, certain vegetables have as much motion in their leaves and flowers as certain animals; for example, shell-worms. However, by attending to the most general characters, we may define animals to be bodies endowed with sensation and motion, necessary to preserve their life. They are all capable of reproducing their like: some, by the union of the two sexes, produce small living creatures; others lay eggs, which require a due temperature to produce young: some multiply without conjunction of sexes; and others are reproduced when cut in pieces, like the roots of plants.

After man, all other animals have been divided into eight classes, in the following manner:

DAUBENTER'S DIVISION and CHARACTERS of the Eight Classes of ANIMALS.

Having a head.				The most part having no head.			
With nostrils.				Without nostrils.			
With ears.				Without ears.			
Two ventricles in the heart.		One ventricle in the heart.			The heart variously formed, or unknown.		
Warm blood.		Blood nearly cold.			A whitish fluid instead of blood.		
Inspiring and expiring air frequently.		Inspiring and expiring air at long intervals.		Admitting the air by gills.	Admitting the air by spiracula.	No apparent entrance or aperture to admit air.	
Viviparous.		Oviparous.					
With teats.		Without teats.					
1st Ord. Quadrupeds.	2d Ord. Cetaceous Animals.	3d Ord. Birds.	4th Ord. Oviparous Quadrupeds.	5th Ord. Serpents.	6th Ord. Fishes.	7th Ord. Insects.	8th Ord. Worms.
Four feet and hairy skin.	Fins and no hair.	Feathered.	Four feet and no hair.	Scaly without feet or fins.	Scaly with fins.	Having antennæ.	Having neither feet nor scales.



All animals are fed on vegetables, either directly or by the intervention of other animals. No one part of their substance is derived from any other source except water. The small quantity of salt used by man and some other animals, is only necessary as a seasoning or stimulus to the stomach. As the animal then is derived from the vegetable matter, we accordingly find that the former is capable of being resolved into the same principles as those of the latter. Thus, by repeated distillations, we obtain from animal substances, water, oil, air, an easily destructible salt, and charcoal. These secondary principles are, by farther processes, at length resolvable into the same proximate principles which we find in vegetables, *viz.* water, air, earth, and the principle of inflammability. But though the principles of vegetable and animal substances are fundamentally the same, yet these principles are combined in a very different manner. It is exceedingly rare that animal substances are capable of the vinous or acetous fermentations; and the putrefactive, into which they run remarkably fast, is also different in some particulars from the putrefaction of vegetables; the escape of the phlogiston in the form of light is more evident, and the smell is much more offensive in the putrefaction of animal, than of vegetable substances. The putrefaction of urine is indeed accompanied with a peculiar fœtor, by no means so intolerable as that of other animal matters: this we suppose to be owing to the pungency derived from the volatile alkali, and also to the urine containing less inflammable matter than the blood and many other fluids. When analysed by a destructive heat, animals afford products very different from those of vegetables: the empyreumatic oil has a particular and much more fetid odour; and the volatile salt, instead of being an acid, as it is in most vegetables, is found in animals to be a volatile alkali. Chemists have spoken of an acid procurable from animal substances; and indeed certain parts of animal bodies are found to yield a salt of this kind; but it by no means holds with animal substances in general; and though the proofs to the contrary were even conclusive, it is confessedly in so small a quantity as not to deserve any particular regard. In some animals, however, an acid exists, uncombined and ready formed in their bodies. This is particularly manifest in some insects, especially ants, from which an acid resembling the acetous has been procured by boiling them in water. The solid parts of animal bodies, as the muscles, teguments, tendons, cartilages, and even the bones, when boiled with water, give a gelatinous matter of glue

resembling the vegetable gums, but much more adhesive. We must, however, except the horny parts and the hair, which seem to be little soluble either in water or in the liquors of the stomach. The acids, the alkalies, and quick-lime, are also found to be powerful solvents of animal matter. It is from the solid parts that the greatest quantity of volatile alkali is obtained; it arises along with a very fetid empyreumatic oil, from which it is in some measure separated by repeated rectifications. This salt is partly in a fluid, and partly in a concrete state; and from its having been formerly prepared in the greatest quantity from the horns of the hart, it has been called *salt or spirit of hartshorn*. Volatile alkali is, however, procurable from all animals, and from almost every part of an animal body except fat. Though we are sometimes able to procure fixed alkali from an animal cinder, yet it is probable that this salt did not make any part of the living animal, but rather proceeded from the introduction of some saline matter, incapable of being assimilated by the functions of the living creature.

In speaking of the fluid parts of animals, we should first examine the general fluid, or blood, from whence the rest are secreted. The blood, which at first sight appears to be an homogeneous fluid, is composed of several parts, easily separable from each other, and which the microscope can even perceive in its uncoagulated state. On allowing it to stand at rest, and to be exposed to the air, it separates into what are called the *crassamentum* and the *serum*. The crassamentum, or cruor, chiefly consists of the red globules, joined together by another substance, called the *coagulable lymph*: the chemical properties of these globules are not as yet understood; but they seem to contain the greatest quantity of the iron found in the blood. The serum is a yellowish subviscid liquor, having little sensible taste or smell: at a heat of 160 of Fahrenheit it is converted into a jelly. This coagulation of the serum is also owing to its containing a matter of the same nature with that in the crassamentum, *viz.* the coagulable lymph: whatever then coagulates animal blood, produces that effect on this concrescible part. Several causes, and many different substances, are capable of effecting this coagulation; such as contact of air, heat, alcohol, mineral acids, and their combinations with earths, as alum, and some of the metallic salts. The more perfect neutral salts are found to prevent the coagulation, such as common salt and nitre.

Of the fluids secreted from the blood, there are a great variety in men and other animals. The excrementitious and redundant fluids are

those which afford in general the greatest quantity of volatile alkali and empyreumatic oil: there are also some of the secreted fluids, which, on a chemical analysis, yield products in some degree peculiar to themselves. Of this kind is the urine, which is found to contain in the greatest abundance the noted salt formed from the phosphoric acid and volatile alkali. The fat, too, has been said to differ from other animal matters, in yielding, by distillation, a strong acid, but no volatile alkali. There is also much variety in the quantity and state of the combination of the saline and other matters in different secreted fluids.

Animal *oils* and *fats*, like the gross oils of vegetables, are not of themselves soluble either in water or vinous spirits: but they may be united with water by the intervention of gum or mucilage. Most of them may be changed into soap by fixed alkaline salts, and be thus rendered miscible with spirit as well as water.

The odorous matter of some odoriferous animal substances, as musk, civet, castor, is, like essential oil, soluble in spirit of wine, and volatile in the heat of boiling water. Carthusius relates, that from castor an actual essential oil has been obtained in a very small quantity, but of an exceedingly strong diffusive smell.

The vesicating matter of cantharides, and those parts of sundry animal substances in which their peculiar taste resides, are dissolved by rectified spirit, and seem to have some analogy with resins and gummy-resins.

The gelatinous principle of animals, like the gum of vegetables, dissolves in water, but not in spirit or in oils: like gums, also, it renders oils and fats miscible with water into a milky liquor.

Some insects, particularly the ant, are found to contain an acid juice, which approaches nearly to the nature of vegetable acid.

There are, however, sundry animal juices, which differ greatly, even in these general kinds of properties, from the corresponding ones of vegetables. Thus, animal serum, which appears analogous to vegetable gummy juices, has this remarkable difference, that though it mingles uniformly with cold or warm water, yet, on considerably heating the mixture, the animal matter separates from the watery fluid, and concretes into a solid mass. Some have been apprehensive, that the heat of the animal body, in certain diseases, might rise to such a degree as to produce this dangerous or mortal concretion of the serous humours: but the heat requisite for this effect is greater than it appears capable of sustaining.

The soft and fluid parts of animals are strongly disposed to run into putrefaction; they putrefy much sooner than vegetable matter, and, when corrupted, prove more offensive.

This process takes place, in some degree, in the bodies of living animals, as often as the juices stagnate long, or are prevented, by an obstruction of the natural excretories, from throwing off their more volatile and corruptible parts.

During putrefaction, a quantity of air is generated; all the humours become gradually thinner, and the fibrous parts more lax and tender. Hence the tympany, which succeeds the induration of any of the viscera, or the imprudent suppression of dysenteries by astringents; and the weakness and laxity of the vessels observable in scurvy, &c.

The crassamentum of human blood, as well as that of brutes, changes by putrefaction into a dark livid-coloured liquor; a few drops of which tinge the serum with a tawny hue, like the ichor of sores and dysenteric fluxes, as also the white of the eye, the saliva, the serum of blood drawn from a vein, and the liquor that oozes from a blister in the scurvy and the advanced state of malignant fevers.

The putrid crassamentum changes a large quantity of recent urine to a flame-coloured water, so common in fevers and in the scurvy. This mixture, after standing an hour or two, gathers a cloud resembling what is seen in the crude water of acute distempers, with some oily matter on the surface like the scum which floats on scorbutic urine.

The serum of the blood deposits, in putrefaction, a sediment resembling well-digested pus, and changes to a faint olive-green. A serum so far putrefied as to become green, is perhaps never to be seen in the vessels of living animals; but in dead bodies this serum is to be distinguished by the green colour which the flesh acquires in corrupting. In salted meats, this is commonly ascribed to the brine, but erroneously; for that has no power of giving this colour, but only of qualifying the taste, and in some degree the ill effects, of corrupted aliments. In foul ulcers and other sores, where the serum is left to stagnate long, the matter is likewise found of this colour, and is then always acrimonious.

The putrefaction of animal substances is prevented or retarded by most saline matters, even by the fixed and volatile alkaline salts, which have generally been supposed to produce a contrary effect. Of all the salts that have been made trial of, sea-salt seems to resist putrefaction the least; in small quantities it even accelerates the process. The vegetable bitters, as chamomile flowers, are much stronger antiseptics, not only



preserving flesh long uncorrupted, but likewise somewhat correcting it when putrid: the mineral acids have this last effect in a more remarkable degree. Vinous spirits, aromatic and warm substances, and the acrid plants, falsely called *alkalescent*, as scurvy-grass and horse-radish, are found also to resist putrefaction. Sugar and camphor are found to be powerfully antiseptic. Fixed air, or the carbonic acid, is likewise known to resist putrefaction; but above all the vapour of nitrous acid, in the form of air (the nitrous air of Dr. Priestley), is found to be the most effectual in preserving animal bodies from corruption. The list of the sceptics, or of those substances that promote putrefaction, is very short; and such a property has only been discovered in calcareous earths and magnesia, and a very few salts whose bases are of these earths.

It is observable, that notwithstanding the strong tendency of animal matter to putrefaction, yet broths made from them, with the admixture of vegetables, instead of putrefying turn sour. Sir John Pringle has found, that when animal flesh in substance is beaten up with bread or other farinaceous vegetables, and a proper quantity of water, into the consistence of a pap, this mixture likewise, kept in a heat equal to that of the human body, grows in a little time sour; while the vegetable matters, without the flesh, suffer no such change.

Some few vegetables, in the resolution of them by fire, discover some agreement in their matter with bodies of the animal kingdom; yielding a volatile alkaline salt in considerable quantity, with little or nothing of the acid or fixed alkali, which the generality of vegetables afford. In animal substances, also, there are some exceptions to the general analysis: from animal fats, as we before observed, instead of a volatile alkali, an acid liquor is obtained; and their empyreumatic oil wants the peculiar offensiveness of the other animal oils.

ANIMALCULÆ, a diminutive of the word *animal*; that is, they are such little creatures as require to be viewed through glasses to discern them distinctly. Rain, as soon as it falls, contains many *animalcula*, but snow still more; the dew on glass windows is full of them. In boiled water they retain their shape, and sometimes revive.

*Animalcula* appear in shoals in the fluid they swim in; and if disturbed, they separate, as fish in a pond, and will be many hours before they are collected together. They follow their liquor, in which they swim, to the last drop, and then for want of it they seem to struggle and die; after their apparent death, put water to them, and they revive. When seemingly dead,

they are very flat; but if not destroyed, they soon recover their plumpness.

*Animalcula* choose the surface of liquors, probably for the sake of air.

Dip a needle point into the oil of vitriol, then into a drop of liquor in which these *animalcula* are, and they instantly spread about to evade the acid, and soon drop down dead. If the needle is dipped in a solution of common salt, or in the tincture of salt of tartar, the same is observed to follow. Sugar, urine, and blood, speedily destroy them.

Vinegar contains *animalcula* in great number.

Default, and some others, endeavour to prove that all diseases are owing to *animalcula*; but it does not appear that any animal substance contains *animalcula* until it becomes putrid, and then these are the effect rather than the cause of diseases.

ANISEED; *anisum* (from  $\alpha$  neg. and *νισος*, equal); so called from the inequality of its leaves. ANESUM, ANICETUM, ANISE. It is the PIMPINELLA ANISUM, *fructus ovato-oblongus, petala inflexa, stigmata subglobosa*. CL. PENTANDRIA. ORD. DIGYNIA. Linn. Gen. Plant. 366. Anisum Herbariis. COMMON ANISE.

Hoffman calls the seeds *solamen intestinorum*, by way of eminence, for their service in complaints of the bowels in the human subject.

The common *anise* is a small, annual, umbelliferous herb; its seeds are roundish, striated, flattened on one side, pointed at one end, and of a pale colour inclined to green; the upper leaves are divided into fine segments, the lower are entire and roundish, and serrated about the edges. It is a native of Egypt, Crete, and Syria; is cultivated in the southern parts of Europe, and grows in our gardens in England; but it does not arrive at any great degree of perfection with us. The seeds only are used in medicine; and those which are produced in Spain are smaller than those obtained in other countries, and are generally the most esteemed.

Aniseeds have an agreeable aromatic odour, and to the taste they are gratefully warm, with a degree of sweetness. They are carminative; much used in the gripes and flatulent complaints of horned cattle; in which case, the powder is given in a ball with ginger, &c. (See BALL.) They are supposed to increase the milk in cows after calving, and are therefore given, with other cordial materials, on such occasions, in the form of a DRINK. Some say the odour is perceptible in the milk.

Water and spirit of wine both completely extract the virtues of aniseeds; but in distillation very little is obtained or carried over with the spirit; however, after its evaporation, a power-

ful and agreeable extract remains. The oil of aniseed is sometimes given, instead of the seeds in powder.

**ANNULAR**, in anatomy, a term given to certain ligaments, cartilages, &c. in an animal body, from their resemblance to a ring (*annulus*).

**ANODYNES** (from  $\alpha$  neg. and  $\omega\delta\upsilon\eta$ , *pain*), medicines which ease pain, and procure sleep. They are divided into three sorts, viz.

1. *Paregorica*. Παρηγορεῖω, *mitigo*, called also *antemica*. Paregorics, or such as alluage pain.

2. *Hypnotica*, *Hypnotæos*. Hypnotics, or such as relieve by procuring sleep, ὕπνος, *somnus*.

3. *Narcotica*. Narcotic, or such as ease the patient by stupifying him; ναρκωω, *stupefacio*.

Opiates and narcotics destroy sensation in an animal. Some hypnotics and paregorics procure ease and sleep by removing the offending cause. But the term anodyne is now generally employed for those means only which relieve pain by diminishing or destroying sensibility.

The doses of these medicines are generally regulated by the pulse; yet this rule is not without exceptions. If the pulse is strong, a larger dose is safe; if weak, a less dose must be given.

**ANOREXY**, want of appetite, in brutes, is seldom an original disease, but a consequence of some other. See **APPETITE**.

**ANTAGONIST**, a term applied by anatomists to a muscle whose office is to counteract another muscle acting in a diametrically opposite direction. There are many examples of this in every animal body.

**ANTERIOR**, a term used in anatomy in opposition to *posterior*. Both these are necessary to afford a clear idea of the situation of parts when described verbally by an anatomist. Thus, in the horse, we have a muscle called the *anterior* dilator of the nostril, the *anterior* cartilage of the outer ear, &c.

**ANTHELMINTICS**, medicines calculated to destroy and carry off worms which lodge in the intestines of an animal. See **BOTTS**, **WORMS**, &c.

**ANTICOR**, a disease in horses, called in French *anticaeur*, on account of its being near or over against the heart. Most authors have been mistaken as to the nature of this disease. The greatest number attribute it to the heart; and Sollysell calls it a swelling of the pericardium. But they are all plainly in error; for an anticor is an inflammation in the gullet and throat, and is the very same which in man is called angina, or quinsy.

The signs of an anticor, according to writers on the subject, are a swelling in the breast of a horse, which sometimes rises upwards along the

gullet, and threatens suffocation. The animal will hang down his head, and groan much when he is laid down, forsaking his food; neither can he stoop to graze or hay upon the ground. He has a faltering in his fore legs, and trembling of the whole body; and if you tie up his head, to give him a drench, he is like to tumble over. It is said that the English horses are not so subject to this disorder as the French, Spanish, and other foreign horses are, though there can be no reason for this, unless it be that the climate is naturally more temperate.

This disorder proceeds from hard riding, exposing a horse to the cold, and giving him cold water to drink when he is hot, full feeding, and whatever else may cause a sudden inflammation. Some suppose it to proceed from fatness and rank feeding.

The cure should be attempted by early, large, and repeated bleedings, to abate the inflammation; and if the horse be costive, purging clysters are to be used. See **CLYSTER**.

These should be injected through a very long pipe for the purpose, and as warm as a man can bear his cheek to the side of the bladder it is tied up in, and it should be repeated as occasion offers.

If the horse takes to food, nothing should be given him but moistened hay, and scalded bran; and such things as are proper to keep down heat and inflammation, and abate the feverish symptoms. See **INFLAMMATION**.

If he can swallow it, you may venture to give the horse a gentle purge; for which purpose, 'Take succotrine aloes half an ounce; salt of tartar, two drams; beat these well together with honey, sufficient to make a ball, which may be given with the usual precautions.' After the operation of purging has been sufficiently performed, antimonials, joined with nitre, will be of service. See **ANTI-MONIALS**.

If the swelling appears outwardly, and, at the same time, the other symptoms abate, apply ripening cataplasms and poultices, made of the following ingredients. "Take linseed, four ounces; camomile flowers, four handfuls; boil them over the fire till most of the moisture be evaporated; then add a quantity of cow's dung equal to the other ingredients, with a sufficient quantity of lard to keep it moist." Let this be applied pretty warm; or, instead of it, cow's dung alone, applied warm to the part, with a sufficient quantity of lard, may be as well.

When the tumor grows soft, and the matter seems ready for a discharge, it may be opened in the lowermost part, by the application of a caustic or hot iron, keeping a dressing on the



mouth of the wound till the running abates; and likewise applying compreffes, and a convenient bandage, to keep the elevated skin close to the subjacent flesh, that it may be sooner united: but if the cavity of the abscess be large, it will not be amiss to lay it open with a knife an inch or more.

The cure may be finished with applying only basilicon, or a digestive made with turpentine, yolks of eggs, and honey; and if any foulness appears, or if it heal too fast, or spongy soft flesh arise, pledgets dipt in alum-water, or a solution of blue vitriol, may be applied, which will keep it smooth and even.

But if the swelling increase very fast, which oftentimes happens, and there is no tendency to digestion, but that it rises towards the neck, affecting all the muscles in those parts, the horse will then be in danger of suffocation, and unless speedy relief be given he must soon be strangled. Therefore, besides repeated bleeding, if he is not much exhausted, authors advise to take a hot fearing iron, and to apply it to five or six places on the lower part of the swelling, cauterizing those parts, that they may be speedily brought to matter, and the inflammation be drawn to the surface. By making vents that are sufficient to discharge the matter, we anticipate the pain, and take off from its violence, which is also an extreme to be avoided; neither need we be afraid of the swellings that may casually happen in the fore legs, and perhaps even the limbs, by cauterizing; for that cannot be of such ill consequence as when it is upon the neck and throat; neither will it be of any continuance if due care be taken in the application of these remedies.

**ANTIDOTE**, a medicine calculated to prevent or remedy the effects of poison. In cases where horses, or cattle, &c. have been maliciously poisoned, it is of some consequence to know what methods can be taken to prevent the intended mischief. Poisons are of *various kinds*; and before any attempt is made to relieve an animal in such a predicament, it is first necessary to ascertain (if that be possible) what poisonous substance has been administered; as, without this, little is to be expected from any thing we can give.

Arsenic, corrosive sublimate, and opium, are the only poisons likely to be given in such cases. The first and last of these are the most difficult to counteract, since we know of no means of rendering them inactive in the stomach, and nature has denied to these animals the power of disgorging what is noxious by the salutary process of *vomiting*. This, however, is not the case with *sublimate* (now known in the shops by

the name of *muriated quicksilver*, which may be rendered harmless by drenching the animal with water in which a quantity of alkali (pot-ash, soda, or salt of tartar) has been dissolved. (See **ALKALI**.) A ley made by steeping wood-ashes in water for a few minutes, will do equally well; but, in either case, the water must not be made sharper than a man could bear in his mouth without inconvenience. The quantity of this to be given must be regulated by the effects which we suppose to be produced by the sublimate. From a pint to a quart may be given, repeatedly, till all seeming danger is at an end.

When arsenic has been given, the same course may be taken, though the prospect of good from it is less flattering. It has been usual to give oil in such cases, but the effect of it is doubtful. If administered, it should be in large quantity, as a pint or a quart at a time.

Opium kills by its effect on the nerves of the stomach; and in the same way hemlock, nightshade, or aconite, act as poisons. We know of no certain antidote against poisons of this class. In some animals, as the cow, &c. it might be advisable, *where the nature of the fact is fully known*, to make a wound in the stomach with a knife, and empty it of its contents (see **HOVEN**); after which, it is possible, the animal may recover.

**ANTIMONIALS**, the general name for the chemical preparations of antimony (see **ANTIMONY**), or for such pharmaceutical remedies as are in part composed of them. These are of such essential consequence, that no veterinary practitioner should be ignorant of them in any respect. For that reason we shall here fully detail the different preparations of antimony to be found in the chemists' shops; marking even the distinct modes of preparing the several medicines of this class by the colleges of physicians of London and Edinburgh.

If powdered antimony be exposed to a gentle fire, the sulphur exhales: the metallic part remaining in form of a white calx, reducible, by proper fluxes, into a whitish brittle metal, called *regulus*. This is readily distinguished from the other bodies of that class, by its not being soluble in aqua fortis; its proper menstruum is aqua regia.

If aqua regia be poured on crude antimony, the metallic part will be dissolved; and the sulphur thrown out, partly to the sides of the vessel, and partly to the surface of the liquor, in the form of a greyish-yellow substance. This, separated and purified by sublimation, appears on all trials the same with pure common brimstone.

The metal freed from the sulphur naturally

blended with it, and afterwards fused with common brimstone, resumes the appearance and qualities of crude antimony.

There is a striking difference between the effects of the preparations of antimony on the human and brute stomach. To the former, the antimonial metal is a medicine of the greatest power of any known substance. A quantity too minute to be sensible in the tenderest balance is capable of producing violent effects, if taken dissolved, or in a soluble state. If given in such a form as to be immediately miscible with the animal fluids, it proves violently emetic; if so managed as to be more slowly acted on, cathartic; and in either case, if the dose be extremely small, diaphoretic. Thus, though vegetable acids extract so little from this metal, that the remainder seems to have lost nothing of its weight, the tinctures prove in large doses strongly emetic, and in smaller ones powerfully diaphoretic. The regulus has been cast into the form of pills, which acted as violent cathartics, though without suffering any sensible diminution of weight in their passage through the body; and this repeatedly for a great number of times. These preparations, however, exhibited to the horse, have a less sensible effect than antimony in its crude state. Notwithstanding this, they are of considerable importance, as will be occasionally shewn in the treatment of his diseases.

This metal, divested of the inflammable principle which it has in common with other metallic bodies that are reducible to a calx, becomes indissoluble and inactive. The calx, nevertheless, urged with a strong fire, melts into a glass, which is as easy of solution, and as violent in operation in the human subject, as the regulus itself: the glass, thoroughly mixed with such substances as prevent its solubility, as wax, resin, and the like, is again rendered mild.

VEGETABLE acids, as has already been observed, dissolve but an extremely minute portion of this metal: the solution nevertheless is powerful. The nitrous and vitriolic acids only corrode it into a powder, to which they adhere so slightly as to be separable in a considerable degree by water, and totally by fire, leaving the regulus in form of a calx similar to that prepared by fire alone. The marine acid has a very different effect: this reduces the regulus into a violent corrosive; and though it difficultly unites, yet it adheres so very closely as not to be separable by any ablution, nor by fire, the regulus arising along with it. The ni-

trous or vitriolic acids expel the marine, and thus reduce the corrosive into a calx similar to the foregoing.

Sulphur remarkably abates the power of this metal: and hence crude antimony, in which the regulus appears to be combined with sulphur, from one-fourth to one-half its weight, proves altogether mild. If a part of the sulphur be taken away by such operations as do not destroy or calcine the metal, the remaining mass becomes proportionally more active.

The sulphur of antimony may be expelled by deslagration with nitre: the larger the quantity of nitre, to a certain point, the more of the sulphur will be dissipated, and the preparation will be the more active. If the quantity of nitre be more than sufficient to consume the sulphur, the rest of it, deslagrating with the inflammable principle of the regulus itself, renders it again mild.

The sulphur of antimony is likewise absorbed in fusion by certain metals and by alkaline salts. These last, when united with sulphur, prove a menstruum for all the metals (zinc excepted); and hence, if the fusion be long continued, the regulus is taken up, and rendered soluble in water.

From these particulars with respect to antimony, it may naturally be concluded, that it not only furnishes us with an useful and active medicine, but that it may also be exhibited for veterinary purposes under a great variety of different forms, and that the effects of these will be considerably diversified. And this has in reality been the case. For further information respecting antimony, and its uses in practice, we refer our readers to the different heads of disease under which antimonials are said to be needful. But although there is perhaps no preparation there mentioned, which is not fitted to serve some useful purpose; yet the colleges of physicians both of London and Edinburgh, have now restricted the number of preparations in their pharmacopœias to a few only. And it is highly probable, that from the proper employment of them, every useful purpose to be answered by antimony, as a remedy in the diseases of cattle, may be accomplished.

#### *Calcined Antimony. (L.)*

Take of antimony, powdered, eight ounces; nitre, powdered, two pounds. Mix them, and cast the mixture by degrees into a red-hot crucible. Burn the white matter about half an



hour; and, when cold, powder it; after which wash it with distilled water.

In the last edition of the London pharmacopœia this preparation had the name of *calx of antimony*; and it may be considered as at least very nearly approaching to some other antimonials of the old pharmacopœias, particularly to the nitrated diaphoretic antimony, washed ditto, and stibiated nitre; none of which are now received as separate formulæ of our pharmacopœia; and indeed even the calx of antimony itself, at least as thus prepared, has now no place in the Edinburgh pharmacopœia.

The calx of antimony, when freed by washing from the saline matter, is extremely mild, if not altogether inactive in the human subject, but whether in the horse and other domestic animals, has not yet been determined by experiment. For a man, the common dose is from five grains to a scruple, or half a dram; though Wilson relates, that he has known it given by half ounces, and repeated two or three times a day, for several days together.

Some report that this calx, by keeping for a length of time, contracts an active quality: from whence it has been concluded, that the powers of the reguline part are not entirely destroyed; that the preparation has the virtues of other antimonials which are given as *alteratives*; that is, in such small doses as not to stimulate the primæ viæ. The uncalcined part being grosser than the true calx, the separation is effected by often washing with water, in the same manner as is directed by separating earthy powders from their grosser parts.

It has been observed, that when diaphoretic antimony is prepared with nitre abounding with sea-salt, of which all the common nitre contains some portion, the medicine has proved violent. This effect is not owing to any particular quality of the sea-salt, but to its quantity, by which the proportion of the nitre to the antimony is rendered less.

The *nitrum stibiatum*, as it was called, is produced by the deflagration of the sulphur of the antimony with the nitre, in the same manner as the *sal polychrest*, from which it differs no otherwise than in retaining some portion of the antimonial calx.

Notwithstanding the doubts entertained by some respecting the activity of the antimonium calcinatum, yet the London college have in our opinion done right in retaining it. For, while it is on all hands allowed that it is the mildest of our antimonials, there are some accurate observers who consider it as by no means inefficacious.

### *Crocus of Antimony.*

Take of antimony powdered, nitre powdered, of each one pound; sea-salt, one ounce. Mix, and put them by degrees into a red-hot crucible, and melt them with an augmented heat. Pour out the melted matter; and, when cold, separate it from the scoriæ (*L.*)

Equal parts of antimony and nitre are to be injected by degrees into a red-hot crucible; when the detonation is over, separate the reddish metallic matter from the whitish crust; beat it into a powder, and edulcorate it by repeated washings with hot water, till the water comes off insipid. (*E.*)

Here the antimonial sulphur is almost totally consumed, and the metallic part left divested of its corrector. These preparations, given from two to six grains, generally act as violent emetics, greatly disordering the constitution. But the operation, like that of every preparation of antimony whose reguline part is not joined with an acid, must be liable to variations, according to the quantity and condition of the acid in the stomach. Farriers frequently give to horses an ounce or two in a day, divided into different doses, as an *alterative*. In these, and other quadrupeds, this medicine acts chiefly as a *diaphoretic*.

The chemists have been accustomed to make the crocus with a less proportion of nitre than what is directed above; and without any farther melting than what ensues from the heat which the matter acquires by deflagration, which, when the quantity is large, is very considerable: a little common salt is added to promote the fusion. The mixture is put by degrees into an iron pot or mortar, somewhat heated, and placed under a chimney: when the first ladleful is in, a piece of lighted charcoal is thrown to it, which sets the matter on fire; the rest of the mixture is then added by little and little; the deflagration is soon over, and the whole appears in perfect fusion: when cold, a considerable quantity of scoriæ is found on the surface; which scoriæ are easily knocked off with a hammer. The crocus prepared after this manner is of a redder colour than that of the former editions of the London pharmacopœia. And indeed, the method now directed by the London college, may be considered as founded on this: it differs principally from that of the Edinburgh college in the employment of the sea-salt, by which the process is much facilitated.

### *Muriated Antimony. (L.)*

Take of the crocus of antimony powdered,

vitriolic acid, each one pound; dry sea-salt, two pounds. Pour the vitriolic acid into a retort, adding by degrees the sea-salt and crocus of antimony, previously mixed; then distil in a sand-bath. Let the distilled matter be exposed to the air several days, and then let the fluid part be poured off from the dregs.

*Butter of Antimony. (E.)*

Take of crude antimony, one part; corrosive sublimate of mercury, two parts. Grind them first separately; then thoroughly mix them together, taking the utmost care to avoid the vapours. Put the mixture into a coated glass retort (having a short wide neck), so as to fill one half of it: the retort being placed in a sand-furnace, and a receiver adapted to it, give first a gentle heat, that only a dewy vapour may arise: the fire being then increased, an oily liquor will ascend and congeal in the neck of the retort, appearing like ice, which is to be melted down by a live coal cautiously applied. This oily matter is to be rectified in a glass retort into a pellucid liquor.

The process here directed by the Edinburgh college, and which is nearly the same with what stood in the former edition of the London pharmacopœia, is extremely dangerous, inasmuch that even the life of the operator, though tolerably versed in common pharmacy, may be much endangered for want of due care. Boerhaave relates, that one, who from the title he gives him is not to be supposed inexpert in chemical operations, or unacquainted with the danger attending this, was suffocated for want of proper care to prevent the bursting of the retort. The fumes which arise, even upon mixing the antimony with the sublimate, are highly noxious, and sometimes issue so copiously and suddenly as very difficultly to be avoided. The utmost circumspection therefore is necessary.

The *butter*, as it is called, appears to be a solution of the metallic part of the antimony in the marine acid of the sublimate: the sulphur of the antimony, and the mercury of the sublimate, remain at the bottom of the retort united into an æthiops. The solution does not succeed with spirit of salt in its liquid state, and cannot be effected, unless (as in the case of making sublimate) either the acid be highly concentrated, and both the ingredients strongly heated; or when the antimony is exposed to the vapours of the acid distilled from the black calx of manganese. By this last process a perfect solution of the regulus of the antimony in the muriatic acid is effected. Of this more simple, more safe, and less expensive method of preparing

muriated antimony, an account is given by Mr. Ruffel in the Transactions of the Royal Society of Edinburgh.

*Antimonial Powder. (L.)*

Take of antimony coarsely powdered, hartshorn shavings, each two pounds; mix, and put them into a wide red-hot iron pot, stirring constantly till the mass acquires a grey colour. Powder the matter when cold, and put it into a coated crucible. Lute to it another crucible inverted, which has a small hole in its bottom: augment the fire by degrees to a red heat, and keep it so for two hours. Lastly, reduce the matter, when cold, to a very fine powder.

In this preparation, which is the celebrated *James's Powder*, the metallic part of the antimony in a state of calx will be united with that part of the hartshorn which is indestructible by the action of fire, viz. its absorbent earth. If this powder be properly prepared, it is of a white colour. It is a mild antimonial preparation, and is given as an alterative.

*Precipitated Sulphur of Antimony. (L.)*

Take of antimony, powdered, two pounds; water of pure kali, four pints; distilled water, three pints; mix, and boil them with a slow fire for three hours, constantly stirring, and adding the distilled water as it shall be wanted; strain the hot ley through a double linen cloth; and into the liquor, whilst yet hot, drop by degrees as much diluted vitriolic acid as is sufficient to precipitate the sulphur. Wash off, with warm water, the vitriolated kali.

*Golden Sulphur of Antimony. (E.)*

Boil, in an iron pot, four pounds of caustic ley diluted with three pints of water, and throw in by degrees two pounds of powdered antimony; keeping them continually stirring with an iron spatula for three hours, over a gentle fire, and occasionally supplying more water. The liquor loaded with the sulphur of antimony being then strained through a woollen cloth, drop into it gradually, while it continues hot, so much spirit of nitre, diluted with an equal quantity of water, as shall be sufficient to precipitate the sulphur, which is afterwards to be carefully washed with hot water.

The foregoing preparations are not strictly sulphurs; they contain a considerable quantity of the metallic part of the antimony, which is reducible from them by proper fluxes. These medicines must needs be liable to great variation in point of strength; and in this respect they are, perhaps, the most precarious, though



some have affirmed that they are the most certain, of the antimonial medicines. They prove emetic when taken into the human stomach, in a dose of four, five, or six grains; but they are scarcely prescribed with this intention; being chiefly used as alterative deobstruents, particularly in cutaneous disorders. Their effects in veterinary practice remain to be ascertained.

*Tartarised Antimony. (L.)*

Take of crocus of antimony, powdered, one pound and an half; crystals of tartar, two pounds; distilled water, two gallons: boil in a glass vessel about a quarter of an hour; filter through paper, and set aside the strained liquor to crystallize.

*Emetic Tartar. (E.)*

Take of the butter of antimony what quantity you choose; pour it into warm water, in which so much of the purified vegetable fixed alkali has been previously dissolved, that the antimonial powder may be precipitated, which, after being well washed, is to be dried. Then to five pounds of water add of this powder nine drams; of crystals of tartar, beat into a very fine powder, two ounces and a half; boil for a little till the powders are dissolved. Let the strained solution be slowly evaporated in a glass vessel to a pellicle, so that crystals may be formed.

We have here two modes of making the most common, and perhaps we may add the most useful, of all the antimonial preparations, long known in the shops under the name of *emetic tartar*. These modes differ considerably from each other; but in both, the reguline part of the antimony is united with the acid of the tartar. It is perhaps difficult to say to which mode of preparation the preference is to be given; for on this subject the best chemists are still divided in their opinion. The mode directed by the London college is nearly the same with that in former editions of their pharmacopœia, while that now adopted by the Edinburgh college, in which they have nearly followed the Pharmacopœia Rossica, is of later date. That in both ways a good emetic tartar may be formed, is very certain: but in our opinion, when it is formed of the precipitate from the muriatic acid, or the *poudre d'Algarotti*, as it has been called, there is the least chance of its being uncertain in its operation: and this method comes recommended to us on the authority of Bergman, Scheele, and some other of the first names in chemistry. Bergman advises, that the calx be precipitated by simple water,

as being least liable to variation; and this is the direction followed in the Pharmacopœia Rossica. But when the calx is precipitated by an alkaline ley, as is directed by the Edinburgh college, it is more certainly freed from the muriatic acid.

In the after part of the process, whether precipitate or crocus have been used, the quality of the antimonial ought always to be some drams more than is absolutely necessary for saturating the acid of tartar, so that no crystals may shoot which are not impregnated with the active metallic part of the antimony. And in order to secure an uniform strength, some attention is necessary in collecting the crystals, as some may contain more metal than others. After they are all separated from the liquor, they ought to be rubbed together in a glass mortar, into a fine powder, that the medicine may be of uniform strength.

Emetic tartar is, of all the preparations of antimony, the most certain in its operation in the human subject, when given only in the dose of a grain or two. It proves a good alterative to horses given in the dose of half a dram or more; so we are by no means to calculate its operations on brute animals by the standard of its known effects on the human body.

*Vitrified Antimony. (L.)*

Take of powdered antimony, four ounces. Calcine it in a broad earthen vessel, with a fire gradually raised, stirring with an iron rod until it no longer emits a sulphureous smoke. Put this powder into a crucible, so as to fill two thirds of it. A cover being fitted on, make a fire under it, at first moderate, afterwards stronger, until the matter be melted. Pour out the melted glass.

*Glass of Antimony. (E.)*

Strew antimony, beat into a coarse powder like sand, upon a shallow unglazed earthen vessel, and apply a gentle heat underneath, that the antimony may be heated slowly; keeping it at the same time continually stirring to prevent it from running into lumps. White vapours of a sulphureous smell will arise from it. If they cease to exhale with the degree of heat first applied, increase the fire a little, so that vapours may again arise: go on in this manner, till the powder, when brought to a red heat, exhales no more vapours. Melt the calx in a crucible with an intense heat, till it assumes the appearance of melted glass: then pour it out on a heated brass plate or dish.

The calcination of antimony, in order to procure transparent glass, succeeds very slowly,

unless the operator be wary and circumspect in the management of it. The most convenient vessel is a broad shallow dish, or smooth flat tile, placed under a chimney. The antimony should be the purer sort, such as is usually found at the apex of the cones: this, grossly powdered, is to be evenly spread over the bottom of the pan, so as not to lie above a quarter of an inch thick on any part. The fire should be at first no greater than is just sufficient to raise a fume from the antimony, which is to be now and then stirred: when the fumes begin to decay, increase the heat, taking care not to raise it so high as to melt the antimony, or run the powder into lumps; after some time the vessel may be made red hot, and kept in this state until the matter will not, upon being stirred, any longer fume. If this part of the process be duly conducted, the antimony will appear in an uniform powder, without any lumps, and of a grey colour.

With this powder fill two-thirds of a crucible, which is to be covered with a tile, and placed in a wind furnace. Gradually increase the fire till the calx be in perfect fusion, when it is to be now and then examined by dipping a clean iron wire into it. If the matter which adheres to the end of the wire appears smooth and equally transparent, the vitrification is completed, and the glass may be poured out upon a hot smooth stone or copper-plate, and suffered to cool slowly to prevent its cracking and flying in pieces. It is of a transparent yellowish red colour.

#### *Cerated Glass of Antimony.* (E.)

Take of yellow wax a dram; glass of antimony, reduced into a powder, an ounce. Melt the wax in an iron vessel, and throw into it powdered glass: keep the mixture over a gentle fire for half an hour, continually stirring it; then pour it out on paper, and when cold grind it into powder.

The glass melts in the wax with a very gentle heat: after it has been about twenty minutes on the fire, it begins to change its colour, and in ten more comes near to that of Scotch snuff; which is a mark of its being sufficiently prepared; the quantity set down above loses about one dram of its weight in the process.

In the human subject this medicine was for some time much esteemed in dysenteries. The dose given is from two or three grains to twenty, according to the age and strength of the patient. But its effects on brute animals have not been ascertained by experiment.

ANTIMONY, a mineral substance of great importance in veterinary medicine. It is some-

times found in a particular ore, but most frequently mixed with other metals; and hence its name may have been derived, *antimony* being the same with *αντιμοιον* (*αντι*, against, *μοιον*, solus), an enemy to solitude. BASIL VALENTINE, a German monk, gave it, as tradition relates, to some hogs, which, after purging, it greatly fattened; thinking in like manner to feed his brother monks, he gave it to them, who all died by the experiment; hence the name ANTIMONY, ANTI-MONK (*αντι*, against, *μοναχς*, monk). It is called *satanus devorans*, and *lupus philosophorum*, from its power of devouring or destroying, as it were, all metals, when in fusion with it. It is a semi-metal, of a whitish or silver colour.

Its chemical character is a circle, denoting the body of gold, and a cross to show it is corrosive; which, as it prevails, it is placed at the top thus &.

There are mines of *antimony* in Hungary, Transylvania, Germany, France; and in England some are met with. The French *antimony* is about equal parts regulus and sulphur; but the best is from Hungary. The English is, of all the sorts, the least fit for medical use, for it is often mixed with lead or tin, from which, however, if separated, it is as good as any other: that which is spotted with red, Dr. Alston, of Edinburgh, thinks is possessed of some arsenic, so should be rejected.

The *antimony* is generally found mixed with hard stones or spar, from which it is separated by eliquation. Some ores are mixed with arsenic or with cobalt; some are dug up which are composed of fine shining lines like needles, sometimes disposed in regular ranks, at others without any observable order; this is termed male *antimony*;—some are disposed in thin broad plates or laminæ, and called female *antimony* by Pliny; and from their different mixtures and appearances, other names are given to them.

The mineral being broken into pieces, it is put into earthen pots, whose bottoms are perforated with small holes, and a moderate fire is applied round them; as the *antimony* melts, it runs through the holes in the bottom of the pots, and is received into conical moulds that are placed underneath; in these moulds the lighter and more drossy part rises to the surface, while the purer and more ponderous falls to the bottom; whence it is that the broad part of the loaves are less pure than the apex or smaller end. The antimony thus separated from its ore is called crude, which yet is but an ore, or a combination of a particular metal with common sulphur.

The goodness of crude *antimony* is discovered



by its weight, from the loaves not being spongy, from the largeness of the strike, and from its totally evaporating on a strong fire.

Its general appearance is a ponderous brittle mineral, or semi-metal, composed of long shining streaks like needles, mixed with a dark leaden-coloured substance. It hath no particular taste or smell, and is brought to the shops in the form of conical loaves.

*Antimony*, like most of the best medicines, found its way as an internal one into medical practice with great difficulty: the ancients considered it as a poison, and only fit for external uses. Basil Valentine, in the fifteenth century, first brought it into vogue as an internal medicine, publishing a work called *Currus triumphalis Antimonii*; but it soon lost its repute, until Paracelsus raised its credit again, after which it was received and rejected several times, until, by the success of empirics, it acquired an established place in regular practice; and is now justly ranked with the most valuable part of the *materia medica*.

In the state of crude antimony, notwithstanding what has been said by many authors of its efficacy in rheumatic, cancerous, and other cases, it appears, from repeated trials, to be an inert substance with regard to the human body; whilst, on the other hand, it is more active in brute animals than the salts of antimony, produced by its union with different acids. It is, in general, used both as an alterative and evacuant, and hardly any article in the *materia medica* will admit of so extensive a use in diseases of cattle, acute as well as chronical; the varieties of these complaints, however, requiring some difference in their adjuncts.

Antimony promotes all the secretions and excretions, particularly those of the skin, intestines, urinary passages, and salival ducts, by gently irritating the whole nervous and vascular compages. If given in small doses, gradually increasing them, yet keeping to that proportion which excites no sensible discharge, they are efficacious in regenerating a healthy state of the blood: for this purpose their effects are not so speedy as those of iron, but they are more lasting. See *ALTERATIVES*.

Mr. Clarke, of Edinburgh, asserts that horses have been much injured by giving them antimony in a coarse and unprepared state for some time as a prophylactic. (See *PREVENTIVES*). It may not be improper, therefore, to insert here the mode in which this mineral may be rendered a safe medicine.

*Prepared Antimony.* (E.)

Let the antimony be first pounded in an iron

mortar, and then levigated on a porphyry with a little water. After this, put it into a large vessel, and pour a quantity of water on it. Let the vessel be repeatedly shaken, that the finer part of the powder may be diffused through the water; the liquor is then to be poured off, and set by till the powder settles. The gross part, which the water would not take up, is to be further levigated, and treated in the same manner.

By this method, which is that commonly practised in the preparation of colours for the painter, powders may be obtained of any required degree of tenuity; and without the least mixture of the gross parts, which are always found to remain in them after long continued levigation; all the coarser matter settles at first, and the finer powder continues suspended in the water longer and longer, in proportion to the degree of its fineness.

The preparations of this drug are numerous, and have, such of them at least as seem calculated for veterinary purposes, been set forth under the preceding article.

After naming some of the pharmaceutic properties of crude *antimony*, the chief of its preparations follow. 1. Antimony consists of a metallic part, called *regulus*, and of common sulphur. 2. It is easier of fusion than its pure metal. 3. It melts before it is red hot, but not before its containing vessel is so. 4. All its medicinal virtue is in its metallic part. 5. Water neither dissolves the sulphur nor the metal. 6. Rectified spirit of wine affects not the metal, but takes up a small portion of the sulphur. 7. Wine, or any vegetable saponaceous acid, acts on both the sulphur and the metal. 8. Vitriolic acid takes up the inflammable part of this semi-metal, and unites with it into an actual mineral sulphur. 9. The muriatic acid, and the aqua regia, are its proper solvents; the other dissolvers of metals convert it into a calx. 10. Crude *antimony* is volatile on the fire, and volatilises all metals except gold, so as to make them fly away with it in the form of a vapour; hence its use in refining gold. 11. The solution of it in aq. regia, or in the muriatic acid, is precipitated by the addition of water. 12. United with sulphur, or partly calcined with nitre, its activity in the primæ viæ is much abated. 13. When entirely deprived of its phlogiston by calcination, it becomes quite inert, acquiring additional weight. 14. It is soluble in hepatic sulphuris.

*ANTINEPHRITICS*, remedies proper in diseases of the KIDNEYS.

*ANTIPARALYTICS*, medicines calculated to cure the *PALSY*.

**ANTIPHLOGISTICS** (from *αντι*, *against*, and *φλογος* *inflammatio*). Medicines or remedies suited to resist, diminish, or cure inflammation, or an inflammatory diathesis of the constitution. Under this head may be classed all watery diluents, cooling saline aperients, diaphoretics, and diuretics; antimony in small doses; but particularly, BLEEDING, *general and topical*. See BLEEDING, SCARIFICATION, &c.; the uses of which peculiar operations are there explained. Living on watery cooling vegetables, drinking copiously of simple watery liquids, and abstaining totally from all stimulating diet, may be classed amongst the most material efforts for promoting the desired intent, under circumstances where antiphlogistics are required.

**ANTIPLEURITIC** (from *αντι*, *against*, and *πλευρις*, *a pleurisy*). A remedy against a pleurisy.

**ANTISCORBUTICS**, (from *αντι*, *against*, and *scorbutus*, *the scurvy*). Medicines against the scurvy.

**ANTISEPTICS** (from *αντι*, *against*, and *σηπτικα*, *septica* or *purifiers*). Such medicines as resist or correct putrefaction. A complete putrefaction is not a complaint of the brute creation, that can be an object of practice, because it cannot take place in any considerable portion of the body without extinguishing life: it is therefore a tendency to it in any considerable degree, which, producing various morbid disorders, requires the utmost aid of the veterinary art to prevent. Now, as this tendency may be brought on by excess of heat and motion, as well as receiving any ferment into the vascular system; as it, when once fixed, and begun to exert its deleterious action, induces languor and great debility in the moving powers; the reason may be observed, why our antiseptic class of medicines exhibit, according to the conception received of their action, such apparently contradictory views; for we find both volatile and neutral salts in the same arrangement; the former considered as highly heating, and strongly stimulant of the moving powers; the other, cooling the system, and mitigating the vascular action. Hence then, it is apparent, that they are only applicable in different states of putrescent action, or in different constitutions affected with putrescency. And not unlikely the same may hold good with acids and alkalies; for they both are enumerated under antiseptics. They have properly been divided into four heads.—1st. *Such as are cooling*—acid salines, neutral salts.—2d. *Stimulant*—wine, alcohol, oil of turpentine.—3d. *Tonic*—Peruvian bark, wormwood, iron.—4th. *Antispasmodic*—camphor,

assafoetida. All these furnish examples of the particular divisions. From the nature of them, we shall readily know in what particular states each is inapplicable: where there is peculiar sensibility of the stomach, the TONIC are to be avoided; the REFRIGERANT, where a debility of the vital powers is manifest; the STIMULANT, when there is too great a degree of irritability, the circulation too highly accelerated, and strong disposition to profuse bleeding; the SEDATIVE ANTISPASMODICS, when there is too languid a circulation, a lethargic disposition, or a considerable degree of torpor in the system of the animal.

After all, however, though it is highly necessary for the veterinary practitioner to be acquainted with this class of remedies, the instances will be very rare in his practice, that will require the use of them.

**ANTISPASMODICS**, (from *αντι*, *against*, and *σπασμος*, *a convulsion*). Medicines suited to cure spasmodic affections. Opium, assafoetida, and the essential oils of many vegetables, are the most powerful of this kind. Opium, for its immediate effects, excels; assafoetida in many instances, produces more lasting benefit than opium, and indeed it sometimes succeeds where opium has failed; the essential oils differ as *antispasmodics* from opium; in this, they act more upon a particular part than upon the system in general, and have no soporific effect.

Dr. Home, in his Chemical Experiments, hath attended to the comparative strength of this kind of medicines; he does not pretend to positiveness in his conclusions, but, from what arose to his observation, is led to arrange them as follows:

Amongst the first or weaker class, are the fol. aurant. flor. cardamines, artemisa, pæonia, viscus quercinus, extr. hyosciami, castor, mosch. cuprum ammoniacum, and electricity.—Amongst the second class, are fear, camphor, zinc calcined, and blisters.—The third are assafoetida, æther, and quicksilver.—The fourth and strongest are, bark, opium, and bleeding.

He further observes, that most of the *antispasmodics* have, besides their *antispasmodic* quality, other secondary ones, which have as much influence in their effects: besides, some of them possess many laxative and sudorific powers, which others do not: they may be distinguished into the stimulant or inflammatory, and sedative, or anti-inflammatory. Of the stimulant or inflammatory, are electricity, the bark, quicksilver, assafoetida, opium, &c. Of the sedative, or anti-inflammatory, are bleeding, antimony, blisters, camphor, æther, calcined zinc, &c.

*Antispasmodics* are a very uncertain species of



medicines in their effect on the disorders for which they are generally esteemed useful. We may not improperly treat of them in this place, as they apply to the human subject. They are best adapted for those spasmodic affections which are attended with great mobility, and which are usually known by the name of spasmodic diseases. They are more useful in preventing the approach, and in removing spasms which are more immediately present in weaker habits; and in preventing the returns of spasms when given in the remission of the spasm in strong habits: on the contrary, they are less useful in preventing the return of spasms in weak habits than in stronger ones; nay, they rather increase the tendency to spasmodic complaints in weakly people, if given in the interval of those disorders; and are less useful in removing the present fit, in strong habits, than they are in weak ones. Sometimes, indeed, in strong habits, they both remove the present fit and prevent return. Cullen's *Mat. Med.*

**ANTRUM MAXILLÆ SUPERIORIS**, upper MAXILLARY SINUS. All the body of the upper jaw-bone in the horse, &c. is hollow, and its cavity forms this antrum. Each hath a winding passage into the nostril, called *ductus ad nasum*, on the side on which it lies. This cavity and the sockets of the teeth are often divided by interposition of only a very thin bony plate. The membrane which lines this cavity is sometimes inflamed, and matter is formed there.

**ANUS**, the lowest part of the intestinum rectum in an animal, commonly called the **FUNDAMENT**. The extremity of the rectum contracts into a narrow orifice, the sides of which are disposed in close folds. This is called *sphincter ani*, which see. It hath several muscles belonging to it, some of which surround it as sphincters; the rest are broad and fleshy planes inserted into it, and which, being inserted likewise into other parts, sustain it in its natural situation, and restore it too, when it is disturbed by the force necessary for excluding the feces: the latter muscles are termed *levatori ani*. Two ligaments belong to the *anus*, viz. the ligamentum cutaneum ossis coccygis, and the ligamentum pubis interosseum; which see in the anatomical plates. The nerves of the *anus* and its muscles are from the ganglions of the plexus hypogastricus, the inferior rope of both the sympathetici maximi, and the common arch of the extremities of both ropes. The margin or edge of the *anus* is formed by the union of the skin and epidermis, with the internal coat of the intestinum rectum. This part is extremely vascular; hence the troublesome hæmorrhage when this part is accidentally wounded.

Mr. RICHARD LAWRENCE, speaking of the practice of inserting a tube into the anus of a broken-winded horse, with the expectation of relieving him, by allowing a free passage to air generated in the intestines, says, "As free respiration is the basis of health and vigour, so will the contrary produce general debility. Thus, the digestive powers of the stomach being weaker in horses that are broken-winded, flatulency is produced, and the air which is generated in the intestines makes its escape backwards whenever the animal coughs. This circumstance probably gave birth to the ridiculous custom of making an artificial and supplementary anus, with a view of facilitating the egress of the wind, which was erroneously supposed to be the cause of the disease. Broken-winded horses are commonly much better at grass than in the stable. This arises from their being surrounded with a more salubrious atmosphere, and from the green food being more easy of digestion than hay and corn. On this account carrots are given to horses of this description with advantage."

**AORTA**, the great artery proceeding from the left ventricle of the **HEART**. See **BLOOD-VESSELS**.

**APERIENTS** (from *aperio*, to open). These are medicines which have the power of opening the mouths of vessels, hence clearing obstructions of the vascular and glandular kind, as well as the pores of the skin. In this sense, they are synonymous with *deobstruents*. But those medicines which render the bowels gently laxative are now generally called *aperients*; the removal of other obstructions is more confined to the term *deobstruents*.

**APETALI**, (from  $\alpha$  priv. and  $\pi\epsilon\tau\alpha\lambda\omicron\nu$ , the petal of a flower having no corolla). So Tournefort names the sixteenth class of vegetables.

**APEX** (from *apio*, *necto*, to bind). It properly means a tuft, or crest, bound round. In botany it means the top or summit of a leaf.

**APONEUROSIS**, (of  $\alpha\pi\omicron$ , from, and  $\nu\epsilon\rho\omicron\nu$ , a nerve). The word  $\nu\epsilon\rho\omicron\nu$ , from whence comes the term nerve, used in its more latitudinous sense, means tendon, under which idea it is to be understood in this place; and ligament. Hippocrates, and other Greek writers, apply it in this way. The moderns use it to describe a very different substance, viz. any tendinous expansion.

These expansions of tendons, called *aponeuroses*, or fasciæ, grow thinner and thinner, till they are lost in the cellular membrane. Instances of these are frequently met with: e. gr. the outward muscles of the extremities are bound down by one of these expansions, viz. the **FASCIA LATA**. Dr. Hunter describes this *aponeurosis* as proceeding, in the human subject, from the

musculus fasciæ latæ, called *membranofus musculus*, on the external part of the thigh, and from the glutæus maximus on the posterior part.

There are other fasciæ which cover the muscles, as the reader will find on examining the plates of the ANATOMY of the HORSE in this work.

When matter is formed immediately under any of the fasciæ, it cannot point where it was first formed, but runs under them to some distance, to gain an exit: to prevent inconveniences from this cause, as soon as matter can be felt under a fascia, it is right to give it vent immediately, and not to wait for its pointing, as in other situations.

**APOPHYSIS** (from *αποφύω*, to produce; or from *απο*, and *πύω*, to grow). Any thing that grows to, or proceeds from another, as boughs and branches: in ANATOMY it mostly signifies the projection of a bone. It is also called *appendix*, *probole*, *echphysis*, *processus*, *productio*, *projectura*, and *protuberantia*.

**APOPLEXY**, a disease to which many animals are subject. We shall here, as an example, describe it as it occurs in the HORSE, which, when attacked, drops down suddenly without sense or motion, except a working at his flanks, which proceeds from the motion of the heart and lungs, that never ceases while any spark of life remains.

The *previous symptoms* are drowiness, watry moist eyes, somewhat full and inflamed, a disposition to reel, feebleness, a bad appetite, and almost a continual hanging of the head, or resting it in his manger, sometimes with little or no fever, and scarce any alteration in the dung or urine. When the apoplexy proceeds from water collected in the sinuses and ventricles of the brain, the horse has generally, besides all these foregoing symptoms, a disposition to rear up, and is apt to fall back when any one goes to handle him about his head. The reason of his falling backwards seems to be obvious, because when the head is raised with his mouth upwards, the water in the ventricles causes a weight and pressure upon the *cerebellum* and origin of the nerves, so as may deprive a horse of sense and motion at once; this is a case very often seen, but does not prove suddenly mortal. Young horses are most subject to it, and, with proper helps and good usage, sometimes get over it. But when the apoplexy proceeds from wounds or blows on the head, or from any other cause producing ruptures in the blood-vessels, or from matter collected in the brain or its membranes; or if any part of the brain or its membranes be indurated and grown callous by long disease, we shall not only

see most of the symptoms already described, but the horse will be frantic by fits, especially after his feeds, so as to start and fly into motion at every thing that comes near him. These cases are extremely dangerous, and seldom admit of a perfect recovery. Whenever horses fall down suddenly and work violently at their flanks, without any ability to rise even after plentiful bleeding, such horses seldom recover.

For the cure, all that can be done in such cases is to bleed largely from the veins nearest the head; to cause an immediate determination of the blood to the skin, by carefully pouring boiling water on the upper part of the forehead; or rubbing it with spirit of turpentine, by which a strong external stimulus will be occasioned, or the cuticle raised as in a BLISTER. It is next proper to diminish the force of the column of blood passing to the brain, by obliging it to act against its own gravity; on the well-known principle, that fluids pass with the greatest obstruction and difficulty through perpendicular tubes. You must therefore raise up the horse's head and shoulders, supporting them with plenty of straw. By these means he may survive the fit, unless some of the ruptured vessels, or some fluid or extraneous matter, be lodged on the brain or its membranes, in which case these means will be of little service.

If the animal unexpectedly recover from the first attack, give immediately a stimulating clyster; (see CLYSTER); afterwards purging him smartly, with a ball. It will also be necessary to cut several ROWELS, with a view of bringing on a copious discharge, and also to keep him on low DIET.

If the fit happens to be only the effect of a fulness of blood, from high feeding and want of sufficient exercise, or if it be the effect of sily blood, which is often the case with young horses that have been fed for sale, or from catching cold while the blood is in this state; though a horse in these circumstances may reel and stagger, and sometimes fall down suddenly, yet the cure will be attended with no great difficulty if managed thus:

First of all bleed plentifully, and keep the horse for some time to an opening diet of scalded bran, and sometimes scalded barley, lessening the quantity of his hay. After two days repeat the bleeding, but in a smaller measure. If the horse has a cold it will be proper to give him pectoral drinks, such as are prescribed for colds; but if no symptoms of a cold appear, it will be necessary, after bleeding and a spare diet, to give him two or three aboëtic purges, not only to remove the plethora and fulness, but to at-



tenuate and thin his blood. For this purpose give a purging ball that will act briskly. See BALL.

The purge may be made stronger or weaker by adding to or diminishing some of its active ingredients. If purging be repeated two or three times, the horse will probably recover without a relapse. Powder of crude antimony, or its preparations, as the liver, or *crocus metallorum*, or its cinnabar, mixed with equal parts of gum guaiacum, may be also given in ounce doses, for three or four weeks, to relax the vessels of the skin, and procure a more equal distribution of the blood through the system. With the latter intention it is also of consequence to give the horse EXERCISE, which ought to be done as soon as he is able to bear it.

When a horse drops down suddenly with hard riding, or violent driving; this is a case that in many respects resembles an apoplexy, and all the organs of the head are affected as in an apoplexy; but as this proceeds only from the extraordinary rarefaction of the blood, and its rapid motion, whereby the small vessels of the brain are extremely distended, so as to cause an universal pressure on the origins of the nerves, that rise from the *cerebellum*, and *medulla oblongata*, the horse by this means loses all sense and motion, and generally falls suddenly, especially upon any sudden stop; because when the bodily motion ceases, the circulation of the blood in the veins is not accelerated in proportion to its influx from the arteries, which soon produces syncope or fainting, and the animal falls down without sense or motion. Instances of this kind are not uncommon, especially in very hot weather, when the external heat adds greatly to the blood's motion and rarefaction. But as we suppose, in this case, perhaps only a *plethora*, or else an unequal distribution of blood in the vessels, we may bleed plentifully; and unless the horse die with the violence of the fall, which sometimes happens, or by bursting the small vessels of the brain or lungs, or happen to have some affection of the heart, or principal veins, he will soon rise of himself, or without much help, and may be preserved from such accidents in time to come, with better usage. But when such sudden attacks proceed from other causes which are known, the horse may be treated by the rules laid down in the other parts of this work.

The difficulty of distinguishing the diseases which are produced by different causes affecting the brain, or rather an inattention to the discriminating circumstances of several cases of apoplexy, staggers, and palsy, have occasioned

much confusion in different writers on farriery. The two former, by some late veterinary practitioners, are reckoned one and the same disease; but, with deference to their opinions, we apprehend a difference does exist, although it may not affect the treatment of the case; (see STAGGERS). The symptoms produced by a suffusion of lymph on the brain, and which happens chiefly to horses that are in a debilitated state, is rather to be considered as a palsy; (see PALSY).

APOSTLES' OINTMENT, a topical remedy, so called merely because it is made with *twelve* ingredients. The following is the receipt:

Take Venice turpentine,  
Yellow rosin,  
Yellow wax,  
Gum ammoniac, of each 14 drachms;  
Birthwort root, in powder,  
Gum olibanum,  
Bdellium, of each 6 drachms;  
Myrrh,  
Galbanum, of each half an ounce;  
Opopanax, 3 drachms,  
Verdigrise, 2 drachms,  
Litharge, 9 drachms.

These are directed to be melted, and mixed with two pounds of olive oil, to which a little vinegar is added when the ointment becomes nearly cold.

In old books of farriery we find this elaborate composition prescribed for wounds, &c. but equal good effects would be produced if three fourths of the ingredients were to be omitted.

APPENDICULA VERMIFORMIS, or CÆCI (from *appendo*, to hang from; *vermis*, a worm; and *forma*, shape). On one side of the bottom of the cæcum lies an appendix resembling a small intestine, nearly of the same length with the cæcum, but more slender. It is thus called from its resemblance to an earthworm. Its common diameter is about a quarter of an inch. By one extremity it opens into the bottom of the cæcum, the other extremity is closed. Its structure is like that of the intestines in general; its internal coat is folliculous, like that of the duodenum, and is reticular too. Its use is not known; it is also called *additamentum coli*.

APPETITE, a disposition for food natural to all animals. This disposition may be interrupted by the existence of diseases which affect the general system; or it may proceed from a disease of the stomach itself. It is well known, that horses are liable to affections of that organ, which bear an affinity to those of the human body, proceed from the same causes, and are

often attended with the like effects. In fevers; and all inflammatory diseases, horses are greatly affected in their appetites, and loath all manner of food. The same will happen in extreme pain, whether inward or outward; the reason of which is to be accounted for, from the mechanism of the stomach, and its sympathy with all the other parts of the body. Those disorders that are more peculiar to the stomach itself, without the participation of any other concomitant distemper, may be reduced to these two, viz: the *want of appetite*, and BULIMIA, or *voracious appetite*.

1. By the *want of appetite* we do not here suppose a horse to be totally off his stomach, as in fevers, and in cases of excessive pain, but only that he feeds poorly, and is apt to mangle his hay, or leave it in the rack; and this frequently happens to horses that have too much corn given them, which abates their appetite to hay. Some horses are also nice and dainty, but will eat tolerably, when their hay is picked, and free from dust, especially when it is full of the herb and well got; but without such qualities in the hay, they will eat but little. There are others that will eat tolerably well, when they stand much in the stable, and do but little business, but lose their stomachs whenever they come to be worked a little more than ordinary; and some of these may be observed to feed little for several days, after one day's hard riding. However we are not to reckon any horse a poor feeder from the measure of his food, for we see some horses that are small eaters, and yet go through a great deal of fatigue and exercise, without much diminution of their flesh, or any great alteration in their appetite; neither are they more choice than others in what they eat: therefore these horses can hardly be reckoned bad or poor feeders, but little eaters; and any attempt to make them eat better would perhaps do them more harm than good.

When a horse feeds poorly, however, and does not gather much flesh; when his dung is habitually soft, and of a pale colour; it is an evident sign of a relaxed constitution, wherein the weakness of the stomach and bowels have a very great share. This habitual weakness may either be natural and hereditary, or may be caused by some previous ill management, such as too much scalded bran, or too much hot meat of any kind, which relaxes the tone of the stomach, and in the end produces a weak digestion, and consequently the loss of appetite. Some of these kind of horses have proved of little use, till they have been very near full-aged, yet after this they have turned out good

serviceable horses, and done a great deal of business. The best method to harden and recover such horses, is to give them much gentle exercise in the open air, especially in dry weather; never to load their stomachs with large feeds, but keep them, as much as possible, to a dry diet, indulging them now and then with a handful of beans among their oats. Yet if the case be so, that the horse still grows weak, and requires the help of medicine, a laxative purge or two, containing rhubarb and aromatics, should be given to cleanse and invigorate the intestines.

Take Succotrine aloes, half an ounce.

Rhubarb in powder, two drachms.

Ginger powdered, one drachm.

Make it into a stiff ball, with a sufficient quantity of treacle.

This purge will work very gently, bring the horse to a better appetite, and strengthen his digestion. It may be repeated once in about ten days, increasing the quantity of aloes if it does not act sufficiently on the bowels; and the day after the operation of each purge give the following, repeating it for three or four days successively:

Take Myrrh,

Rhubarb,

Vitriolated kali, of each half an ounce.

Pulverise and mix them into a ball with syrup of ginger. Whilst these means are resorted to, continue to give constant exercise in the open air; and this will be the likeliest method to strengthen such horses as are of weak relaxed constitutions, and deficient in appetite.

But where such a habit is only contracted by *too much feeding*, especially on soft scalded diet, which is often the case of young horses, kept up for sale, the best way is to bleed and purge such horses, and, at the same time, to rowl them on the belly; for this sort of feeding easily exposes horses to be lax that have no natural disposition to it. They may grow suddenly fat by such management, yet it always causes weakness and relaxation in the stomach and bowels, the slimy secretions of which often form a proper nidus for the breeding of worms; all which, however, may be easily remedied, by purging in the first place, and afterwards by proper exercise, and a clean diet.

Those horses that are of a hot fiery disposition, and lose their appetites in consequence of their heat and fretting, cannot easily be assisted by medicine. The only method is to keep them to a cool diet, while they are young, and, in country places, let them run abroad, especially where they have stables and warm ranges, to keep them from the inclemency of the weather



in winter; for these sort of horses are always tender, being for the most part extremely thin-skinned, and their blood of a thin texture and easily set in motion. For the same reason, the best way, in the summer, is to bring them up in the day-time, and only let them run abroad in the night, as they suffer more when teased with the flies than any other, which keeps them continually upon the fret, and hinders them from thriving. When such horses live till they are full-aged, their heat of temper often abates, so that they grow more useful; but while they are young, they are more subject to inward abscesses, and imposthumations, than horses of a cooler temperament, and these often kill them suddenly, or bring them into lingering consumptive maladies.

Mr. John Lawrence recommends chalybeate beer, which may be made as follows:

Take Steel filings, one pound;

Cinnamon and mace, of each two ounces;

Gentian-root, bruised, four ounces;

Aniseeds, bruised, three ounces:

Infuse them in one gallon of fine, clear, old, strong beer for a month, stopped close, shaking the vessel often. Then strain the liquor, and give half a pint for a dose, in a pint of cold water, once or twice a-day, upon an empty stomach, leaving the horse an hour or two to his repose.

For the expensive articles cinnamon and mace, some of the cheaper aromatics may occasionally be substituted.

2. We shall now, in the second place, treat of the opposite disease in horses, namely, a *bulimia*, or unnatural craving for food.

If voracious or foul feeding cannot accurately be reckoned a disease, yet it may be the cause of various maladies, and is often the effect of some latent complaint, such as worms, which have a very different effect on different horses; for as horses of a lax habit of body often lose their appetites in consequence of having worms, and are frequently griped and disordered in their bowels, so horses of strong rigid constitutions, that can bear the irritation of those animals in their intestines, are often voracious in their appetites, and are continually craving after food.

*Foul feeders* differ in some things from those that have *voracious appetites*, for as these crave only after their common food, and can hardly ever be satisfied, those on the other hand, viz. *foul feeders*, will leave their hay to eat their litter, and seem to like it the better when it is well sauced with their own dung and urine; and therefore they may be properly said to have a *vitiated or depraved appetite*. Though this

does not always proceed from a voracious appetite, yet the first is often productive of the latter, and may probably be occasioned by enlarging the capacity of the stomach and intestines to such a degree, that nothing will satisfy their cravings but what has weight and solidity; for the same kind of horses will eat mold and wet clay, or any kind of foul nasty weeds out of the ditches, and in the stable will eat stinking musty hay, which the generality of horses will refuse.

There are others of depraved appetites, that are neither foul nor voracious feeders, such as we often observe eat dry loam or mud out of the walls, which perhaps may arise from the irritation of some vitiated juices in their stomachs; and this also is frequently owing to worms, or perhaps to a bad digestion, though without any natural imbecility in their constitutions; for though these horses have a longing after those extraneous things, yet their natural appetites at the same time seldom fail. As this is often merely owing to full feeding, with the want of sufficient exercise, so we see them recover spontaneously and lose that vitiated taste, when they come to ride a journey or go upon any other constant exercise.

The best method in all these cases of a vitiated or depraved appetite, is to begin with purging, and to dissolve chalk in their water, and afterwards to give them good exercise. The same method may be complied with for those that feed voraciously. To these the stomachic ball prescribed above may be given as an experiment; for it is by no means unlikely that the malady arises from a want of sensibility in the organs of digestion, the restoring of which may also restore the natural instincts of the animal. If this course have any good effect, it will be known by his gathering more flesh under this management, and in proportion as his flesh increases his appetite will abate.

As to *foul feeders*, many of these begin with voraciousness, and when they come to be stinted, fall on eating their litter to fill their stomachs, and in time take a great liking to it; and it is observable that many of the horses that become broken-winded have this propensity. Any one who has a foul feeding horse, should keep his stall as clean as possible, let no wet dirty litter lie under him, nor put his litter under the manger, but bestow it on some other horse, otherwise he will paw it out and feed upon it greedily. When the wet litter is taken away every morning, it may be the means to make the horse leave off what seems to be nothing more than a vicious habit.

**APPLUDA**, the chaff of millet, panicum, and ſefamum.

**APPUI**, or ſtay upon the hand, is the reciprocal ſenſe between the horſe's mouth and the bridle-hand, or the ſenſe of the action of the bridle in the horſeman's hand.

The true and right *appui* of the hand, is the nice bearing or ſtay of the bridle; ſo that the horſe, awed by the ſenſibility and tenderneſs of the parts of his mouth, dare not reſt much upon the bitt-mouth, nor chack or beat upon the hand to withſtand it.

Such a horſe has a dull, deaf, *appui*; that is, he has a good mouth, but his tongue is ſo thick that the bitt cannot work or bear upon the bars; for the tongue not being ſenſible, or tender as the bars, is benumbed or hardened by the bitt: ſo the *appui* is not good. This and the following are terms uſed of an *appui*.

The bitt does not preſs the bars in the quick, by reaſon of the groſſeneſs of the tongue, or elſe of the lips. Your horſe has a reſt or ſtay that forces the hand, which ſhews that he has a bad mouth. This horſe has no *appui*, no reſt upon the hand; that is, he dreads the bitt-mouth, he is apprehenſive of the hand, and he cannot ſuffer the bitt to preſs, or bear, though never ſo little, upon the parts of his mouth; and thus it comes to paſs he does not eaſily obey the bridle.

A horſe that is taught a good *appui*, if you mean to give that horſe a good reſt upon the hand, it behoves you to gallop him and put him often back; a long ſtretch gallop is very proper for the ſame end, for in galloping he gives the horſeman an opportunity of bearing upon the hand.

Such a horſe has too much *appui*, he throws himſelf too much upon the bitt; a horſe that has a fine ſtay or reſt upon the hand, *i.e.* equal, firm, and light, or one that obeys the bridle. See **HAND**.

A full *appui* upon the hand, is a firm ſtay, without reſting very heavy, and without bearing upon the hand. Horſes for the army ought to have a full *appui* upon the hand. A more than full reſt or *appui* upon the hand, is ſaid of a horſe that is ſtopped with ſome force; but ſtill ſo that he does not force the hand. This *appui* is good for ſuch riders as depend upon the bridle, inſtead of their thighs.

**APYREXIA** (from  $\alpha$  priv. and πυρεξία, *a fever*). The abſence of fever.

**AQUA**, WATER. Natural philoſophers deſine water to be an *inſpid, ponderous, transparent, colourleſs, uninflamable, and highly fluid* body, ſuſceptible of the different ſtates of aggregation from ſolidity to that of elastic vapour. It owes its fluidity to a certain degree of heat,

ſince with a heat two-thirds leſs than that of our blood it congeals; and with about twice the heat of our blood it boils, beyond which it cannot be made hotter. Water is found in almoſt every natural body; though there are many ſubſtances with which art cannot unite it, yet it is continually done in nature; it is obtained from wood, and the moſt ſolid bones; it exiſts in the hardeſt and moſt compact calcareous ſtones, and forms the greater part of the fluids, and a conſiderable proportion of the ſolid parts of animal bodies. It is contained in bodies in a greater or leſs quantity, and may be conſidered in two ſtates, either in that of ſimple mixture, or in a ſtate of combination: in the firſt caſe, it renders bodies humid, is perceptible to the eye, and may be diſengaged with the greateſt facility; in the ſecond, it exhibits no character; which ſhews that it is in a ſtate of mixture. In this form it exiſts in cryſtals, ſalts, plants, animals, &c. Water exiſting in a ſtate of combination in bodies, concurs in imparting to them hardneſs and transparency; ſalts, and moſt ſtony cryſtals, loſe their transparency when deprived of their water of cryſtallification. Some bodies are indebted to water for their fixity; the acids acquire fixity only by combining with water. Under theſe various points of view, water may be conſidered as the general cement of nature, and has been reckoned amongſt the number of elements; but in a number of experiments, it has proved to be a compound body, formed by the combination of Oxygene and Hydrogene. On which ſubject our readers may conſult the works of modern chemiſts, particularly Lavoifier, Fourcroy, and Chaptal; as our buſineſs is to conſider it only in a *dietetic and medical* point of view.

Not only all kinds of animals, but the greateſt part of mankind, preſerve life by drinking water. If moderately drank, it *aſſiſts digeſtion, quenches thirſt, cools the habit, dilutes the fluids, opens obſtructions, diſſolves viſcidities, corrects acrimony, promotes the fluid ſecretions, and carries all acrid excrementitious ſordes out of the machine, and is an univerſal vehicle for ſolid food*. It is ſuperior to all other liquids, becauſe it is purer, more ſimple, more fluid, and leſs loaded than others uſed for drinking, with heterogeneouſ and ſolid parts. The more pure the water, the better, and that is certainly the beſt which falls in rain, collected from high ſituations in the country. It may be deemed a proper drink for all animals, if there is no impregnation to the taſte or ſmell of a perſon of common ſenſibility drinking it. The ſofter and purer waters, certainly, are to be preferred for uſe; though the harder waters, or ſuch as are impregnated with ſelenites, or



other earthy matters, have not been discovered, by any good and clear evidence, to have produced bad effects.

Good water is known by readily mixing with soap and not curdling therewith; and by quickly boiling pease, pulse, &c. soft and tender; and it keeps best in large vessels in cold places, and in earthen or glass ware.

Muddy water some animals prefer to clear; but it may be cleared by adding five grains of alum to each gallon, and thus the water is not injured. If hard it may be rendered soft by adding a little pot-ash, or chalk.

Stagnant waters, *water* in which is much melted snow or ice, dew, *water* from mines and high rocks, such as rises in low flat lands, and particularly from springs in which are unctuous, earthy, bituminous matter at the bottom, are bad: but good *water* is obtained from springs which are on high lands, that consist much of a clean earth and gravel; from the clouds, by rain falling at a distance from great towns; from rivers and rivulets; but when *distilled*, it is the most pure. For the regulations under which the use of water is to be restricted for horses and other animals; see the excellent observations of Mr. Clarke of Edinburgh, under the article WATERING.

AQUA FORTIS, a chemical liquid, possessing caustic qualities, and occasionally used by farriers. It is an acid procured from nitre, and on that account has recently obtained the names of *nitrous* or *nitric* acid. See ACIDS.

AQUA INFERNALIS, a caustic liquid, prepared with quicklime and pot-ash. It was formerly employed by farriers, but, on account of its too great diffusibility, the lapis infernalis (*kali purum* of the shops) is found more convenient in veterinary practice. It is the most powerful caustic known. See CAUSTIC.

AQUA SAPPHIRINA, a beautiful blue-coloured liquid, applied to the eye for the removal of specks or opacities of the cornea (see ALBUGO). It has now the name of *water of ammoniated copper*, and is thus prepared.

Take Lime-water, one pint;

Muriated ammonia, one drachm.

When the latter is dissolved, let the solution stand in a bright copper vessel till it becomes of a deep blue colour, which owes it to the metal with which it is thus placed in contact.

AQUEOUS HUMOUR. The WATERY HUMOUR of the EYE. It is a limpid water that fills all the space between the cornea of the eye, and the anterior part of the crystalline *humour*. The space in which this *humour* is confined is called the anterior and posterior cham-

bers. The first is betwixt the cornea and the iris; this is the larger of them: the second is betwixt the iris and the crystalline *humour*. The vessels which furnish this *humour* are too small to be described. If a wound discharges this fluid, it is restored in two or three days again. In old age it is not so limpid, whence probably one cause of obscure sight at that time. The chief use of it seems to be to keep the cornea distended, so that the rays of light may be duly refracted in passing to the retina, and for the iris to float loosely in, whereby its actions may be easily performed. See EYE.

ARABIAN HORSE. Travellers and merchants who have visited the East, report, that the true bred *Arabian* horses are at an incredible and intolerable price; being valued at 500*l.* and as others say, at 1, 2, and 3000*l.* an horse. It is said too, that the *Arabs* are as careful of keeping the pedigrees of their horses, as princes are in preserving their genealogies; that they keep them with medals; and that each son's portion is usually two suits of arms, and one of their horses.

The *Arabs* boast, that they will ride fourscore miles without drawing bitt; but this has been performed by some of our *English* horses: and much more was done by a highwayman, who, having committed a robbery, on the same day rode from *London* to *York*, being 150 miles.

Notwithstanding their great value, and the difficulty of bringing them from *Scanderson* to *England* by sea, yet by the care, and at the charge, of some breeders in the north of *England*, the *Arabian* horse has been no stranger to those parts; and perhaps at this day some of the race may be seen there, if not the true *Arabian* stallion. See STALLION.

Mr. JOHN LAWRENCE, in his valuable Treatise on Horses, says, "the far greater part of those horses brought over to this country, under the general appellation of *Arabians*, have never seen *Arabia*, or have been of its inferior breed. They are usually purchased in the *Levant*, *Barbary*, or the *East Indies*, by persons totally unacquainted with horses, or at any rate with the peculiar purpose for which such horses are designed; hence a number of inferior and half-bred *Arabians* have been brought over at a useless expence, to deteriorate, instead of amending, our racing breed, and to bring *Arabian* blood into disrepute. I have seen about a score southern horses, called *Arabians*, at different times, not one of which appeared to be a true mountain horse. Those which were lately at the veterinary college, and which were imported from *India*, were evidently of a mixed

breed; and the *Arabian* at *Hampstead*, appeared, upon the slightest survey, to be no more than a three-part bred horse, well adapted to get saddle and coach-horses. These remarks may serve to account for the defects of the new blood, as it has been styled upon the turf; and as sufficient reasons why the produce of *Arabians* so seldom run their course through.

"The horse next in quality to the *Arab*, is the Mountain Barb: this approximation arises from similarity of climate probably, and from an attention to pedigree by the great men, and other inhabitants of *Barbary*. The Barb is less than the *Arabian*, very deep breasted, but rather of assine or muleish appearance; if genuine, he gets true and stout runners.

"A material question arises here—Have we any further occasion for *Arabian* blood, and will not our *English* courser degenerate, in process of time, without an occasional recurrence to the parent stock? I will take upon me to answer this question in part, or rather I have already done it: we can have no sort of need of such foreign horses as are usually imported, for the plainest reason in the world, we possess much better of our own native stock. But this makes nothing against the propriety of endeavouring to obtain genuine *Arabian* coursers. We ought never to remain stationary and satisfied while there exists a possibility of improvement; the vast advantages resulting from the accidental importation of a very few real good horses has been amply proved, and in my opinion, the prosecution of a concerted plan for obtaining a further supply, would be an object not unworthy the attention of a gentleman of the turf, either in the view of curiosity or profit; the plan best adapted to that end is matter of enquiry.

"I have never heard, that any properly qualified person has been sent to *Arabia* for the purpose of purchasing horses; nevertheless, I believe such to be the only probable method of obtaining the genuine stock in request. The tenaciousness of the *Arabians* of their highest bred horses, has been long known, and very few, or none of such, ever find their way to the great fairs in the eastern countries, where the common *Arabian*, and other eastern horses, are usually purchased.

"The following is the best account of the *Arabian* horses which I have been able to obtain, either from reading or enquiry. They have in that country, three distinct breeds, or rather, two varieties from the original genus; from analogy of qualification the three classes may be properly enough compared with our racers, hunters, and common bred horses. The

distinctive appellations of the *Arab* horses are, Kehilani or Cocklani, Kehidifchi or Guideski, and Atticki. The first, or Cocklani, are the original genus, bred in the middle or mountainous country, where it is said a few are yet to be found in the wild, or natural state. The *Arabs* pretend to have pedigrees of this illustrious race, upwards of two thousand years old; but whether their private records accord with truth exactly or not, is of little moment, since the antiquity and character of the Mountain *Arabian* horse has the fullest sanction of both ancient and modern experience. The Atticki, or inferior breed, may probably have been the original produce of the low country, and the middle variety may have resulted from a mixture of mountain and low-country stock. The *Arabians* are seldom willing to part with their best mares, at any price; and the value of a true-bred one, whether horse or mare, is said to amount to several hundred pounds in the country.

The *Arabian* horses are fed with dates, milk, and corn; it is not to be supposed, that in such a country, they have the ample allowance of corn, usual in this; nevertheless it is confidently asserted, that the superior breed of them will travel eighty or a hundred miles in a day, for several successive days, over the sand and stones of that sultry climate. Dr. BLUMENBACH, who has within these few years written a celebrated treatise on the native varieties of the human species, says, "that all animals destitute of the dark pigment of the eye, are a mere altered breed." How far that observation is entitled to dependence, I have never had an opportunity to consider or examine, but the purchase of a particular breed of animals would surely be least liable to deception in the original country where they were bred. The external characteristic of original genus, is uniformity, or universal symmetry; and the true-bred *Arab* is distinguished by his silken hair, and soft flexible skin, deer-like hoofs and pasterns, small muzzle, full eye, small well-turned head, joined to the neck with a curve, capacious shoulders, extensive angle of the hock, length and extent of thigh, large sinews, and flat bones. I have often observed that convulsive snatching up, and turning out the feet, in the gait of horses said to be *Arabians*, and have ever looked upon it as the indication of a spurious breed; the best *Arabs*, which I have seen, having been good goers, many of them true daisy-cutters. The pawing method of going, cannot always be the consequence of manege, since I have remarked it to descend from a reputed *Arabian*, through several generations."



**ARCANUM** (from *arca*, a *chest*). A remedy or medicine whose preparation is kept secret from the world. Many arcana have been extolled in the days of Alchemy, and the name given to medicines of little value.

**ARCHED.** A horse is said to have arched legs, when his knees are bended archwise. This expression relates to the fore quarters, and the infirmity here signified happens to such horses as have their legs spoiled with travelling. The horses called Brassicourts have likewise their knees bended otherwise, but this deformity is natural to them.

**ARECA**, the fruit of a species of palm-tree which is met with in the East Indies, though some reckon this nut among the species of coconuts. The outward coat is about the size of a pullet's egg, under it is the fruit, which is brown on the outside, in shape like a nutmeg at one end, and flat at the other; within, it is white and marbled with purplish veins: it is rather insipid to the taste; the Indians chew it to help digestion; it is moderately astringent.

The inspissated juice of this fruit is called Terra Japonica, now catechu; but it is generally adulterated with other matters. See **CATECHU**.

**ARGENTUM, SILVER**, a metal insoluble by any vegetable or animal juice; and hence, if swallowed, neither useful nor hurtful. Its only medical use is as a mild caustic, to apply to luxuriant granulations. It is called **NITRATED SILVER**, and is made by the following process. Dissolve pure *silver* by a sand heat in about four times its weight of diluted nitrous acid; then dry away the humidity with a gentle fire; afterwards melt it in a crucible, that it may be poured into proper moulds, carefully avoiding overmuch heat, lest the matter should grow too thick.

The crucible should be large enough to hold five or six times the quantity of dry matter, for it bubbles and swells greatly, and the operator should guard against the drops that spirt up. Keep the fire moderate until the ebullition ceases, and till the matter becomes consistent in the heat that first made it boil, then quickly increase the fire till the matter is thin at bottom, like oil; on which immediately pour it into moulds, without waiting till the fumes cease.

The moulds may be of iron, or of pipe-clay that is soft enough to admit of a greased stick into it.

When it is cold, break the moulds, wrap each piece of the caustic in paper, and keep it from the air, or else it will dissolve. For its mode, &c. of application, see **CAUSTIC**.

If this caustic is dissolved in water, and then some thin plates of copper be added, the pure *silver* will be precipitated.

Some call it *inflammable silver*, for it flames like nitre until it is reduced to the pure state of *silver*, if laid on a red-hot turf.

**ARGENTUM VIVUM; QUICKSILVER.** See that article.

**ARISTOLOCHIA, BIRTHWORT.** The root of this plant forms an article in the prescriptions of several of the old writers on farriery. See **BIRTHWORT**.

**ARM of a horse**, called also the **FORE THIGH**. See the article **HUMERUS**.

**ARM** is also applied to a horse, when he endeavours to defend himself against the bit, to prevent obeying or being checked thereby.

A horse is said to *arm himself*, when he presses down his head, and bends his neck, so as to rest the branches of the bridle upon his bricket; in order to withstand the effort of the bit, and guard his bars and his mouth. See the article **CARRY LOW**.

A horse is said to *arm himself with the lips*, when he covers the bars with his lips, and deadens the pressure of the bit. This frequently happens in thick-lipped horses. The remedy is by using a bit-mouth, forged with a canon or scratch-mouth, broader nearer the bankets than at the place of its pressure, or rest upon the bars. See the article **DISARM**.

For arming against the bit, the remedy is to have a wooden ball covered with velvet, or other matter, put on his chaul, which will so press him between the jaw-bones, as to prevent his bringing his head so near his breast.

**ARMAN**, a confection, reputed, by farriers of the old school, of extraordinary efficacy; but the composition is not worth recording.

**ARMENIAN BOLE.** See **BOLE**.

**AROMATICS**, substances of a warm pungent taste, and a more or less fragrant smell. Some of the spices are purely aromatic, as cubeb, pepper, cloves; some substances have a sweetness mixed with the aromatic matter, as angelica-root, aniseed, fennel-seed; some an astringency, as cinnamon; some a strong mucilage, as cassia lignea; some a bitterness, as orange-peel. The aromatic matter itself, contained in different subjects, differs also not a little in its pharmaceutical properties. It is extracted from all by rectified spirit of wine; from some in great part, from others scarcely at all, by water. The aromatic matter of some subjects, as of lemon-peel, rises wholly in distillation both with spirit and water; that of others, as cinnamon, rises wholly with water,

but scarcely at all with spirit; while that of others, as pepper, is in part left behind after the distillation of water itself from the spice.

With regard to the general virtues of aromatics, they warm the stomach, and by degrees the whole habit; raise the pulse; and quicken the circulation. In the diseases arising in animals from a cold, languid, phlegmatic habit, and a weak flaccid state of the solids, they support the *vis vitæ*, and promote the salutary secretions. In hot bilious temperaments, plethoric habits, inflammatory indispositions, dryness and strictures of the fibres, they are generally hurtful.

The name of *aroma*, or *spiritus rector*, is given to the odorous principle of vegetables. These bodies differ greatly from one another in the quantity, strength, and volatility of the odorous principle which they contain. It is generally found united with volatile oils; but it is soluble in alcohol and water as well as in these. The slightest degree of heat is sufficient to disengage the aroma of plants. To obtain it, the plant must be distilled in a *balneum mariæ*, and its vapours received into a cold capital, which may condense and afterwards conduct them in a fluid state into the receiver. The product is pure odoriferous water, and is known by the name of essential or distilled water. This liquor is to be considered as a solution of the aroma or odorous principle in water. When aromatic water is heated, it loses its smell, in consequence of the odorous principle being more volatile than the fluid in which it was dissolved. This principle is also dissipated by exposure to the air. Many facts would induce us to believe, that the principle of smell is one of the elementary principles of volatile oils; but we are as yet almost completely ignorant of its chemical nature, properties, and combinations.

**ARRESTS**, or **ARRETS**, among farriers, denote a sort of mangy tumors on the sinews of the hind legs of a horse, between the ham and the pastern, called also rat-tails. See **RAT-TAILS**. The name is taken from the resemblance they bear to the *arrests* or back-bones of fishes.

**ARSENIATE**, an arsenical salt formed by the union of the arsenical acid, with certain bases.

**ARSENIC**, a well-known poisonous mineral, which, though it seems to have an affinity both to sulphur and to a semi-metal, yet is not manifestly either. It is contained more or less in most kind of ores, as those of tin, bismuth, the white pyrites, and particularly *cobalt*; from

which last the greatest quantity is obtained. The ore of the cobalt being broken in pieces, is placed over a fire, and the *arsenic* sublimed from it, which resting on the sides of long chimneys designed for its reception, is swept off into proper vessels to be resublimed, or at least melted, by which it is formed into the white shining masses which are met with in the shops.

What we have in England is chiefly brought from the mines in Saxony and Bohemia. Some small quantities are sublimed in Cornwall, from the cobalt that is found there.

Large portions of sulphur render it nearly inert.

The pure *white arsenic* hath a penetrating corrosive taste, and taken into the stomach of an animal, is a violent poison. It produces speedy dryness in the throat, and inflammation, dejection, fainting, stupor, tremors, convulsions, palsy, thirst, burning in the stomach, gripes, cold sweats, hiccough, and at last death. Besides the effects which it hath in common with other poisons, it acts as a caustic on the coats of the stomach, and perforates the intestines, occasions a swelling and sphacelation of the whole body, and a sudden putrefaction after death.

When the quantity taken is not fatal, it occasions tremors, palsies, or lingering diseases.

Though there be but little hope after this poison is swallowed, yet, if assistance is to be had, immediately such attempts should be made as are suggested under the article **ANTIDOTE**.

Arsenic is unfit for use in veterinary practice, except as a topical remedy, and even then, it should be employed with caution. It is a powerful caustic when applied to ulcers; in which cases it seldom happens but that some substance that is safer will do quite as well. A watery solution of it has been used by ignorant persons in the country to cure the mange and other diseases of the skin in cattle, dogs, &c.; but there is great danger attends the practice, however beneficial it may prove against the disease, since these animals generally lick themselves, and are poisoned.

In reading ancient authors on the yellow and red *arsenics*, it should be observed, that their *arsenics* are not the same as ours. Among the Greeks two kinds were in use, viz. the *yellow*, which we now call **ORPIMENT**, and **AURIPIGMENT**; and the *red*, which they call *sandaraca*. The Arabians had also two kinds, viz. the *yellow*, which they call **SCANDABACA**; and the *red*, which they call **REALGAR**. It was the fossil sulphurated *arsenic*, that the ancients used



medicinally, and only those which were yellow and flaky like talc, and which alone they call *arsenicon*. The white *arsenic* is a discovery of later times. The auripigment we meet with is of the yellow sort; its taste is not very acrimonious. The best mineral orpiment is brought from Turkey; it is very little, if at all, poisonous, and may possess some virtues as a topical remedy.

Our yellow and red *arsenics* are artificial, being no other than the white, mixed with different proportions of sulphur. The white is the strongest, the yellow weaker, and the red weakest.

**ARSENICAL CAUSTIC.** See **CAUSTIC**.

**ARTERIOSUS, DUCTUS**, a passage conveying the blood from one artery to another; also called *canalis*, and *canaliculus arteriosus*. This, in the human foetus, arises from the extremity of the arteria pulmonalis, just where it is going to give off the two branches, and opens by its other end into the beginning of the descending aorta, just below the great curvature. In the adult it is obliterated, but in the foetus it is open, and conveys the blood, which hath no passage, or a very slight one, through the lungs in this state of the animal, from the pulmonary artery to the aorta.

**ARTERIOTOMY** (from *αρτηρια*, an artery, and *τεμνω*, to cut), the opening of an artery for the discharge of blood. This is a remedy against violent inflammations of the eyes, the apoplexy, &c. The operation is generally confined to the head, because of the bone being immediately under, and giving the advantage of a proper compress. When the temporal artery is opened, a small knife is better than a lancet, and the incision must be so as to divide the artery transversely, then the inconvenience of an aneurismal tumor is avoided. To hinder the passing of arterial blood to the head is often of more service than discharging it on its arrival there by arteriotomy. With this view, Mr. COLEMAN, PROFESSOR at the VETERINARY COLLEGE, has, in many cases (particularly in inflammations of the eyes in the horse), taken up the *carotid artery* of the affected side. See **OPHTHALMY**.

**ARTERY**, *αρτηρια* (from *αηρ*, air, and *τηρω*, to keep); so called because the ancients supposed that only air was contained in them; but by the word *artery* Hippocrates meant what is now known by the name of *aspera arteria* [or *trachæa*]; nor were the veins distinguished from the *arteries* in the oldest times; for *phleps*, amongst the ancients, was applied both to arteries and veins; and indeed, some of our more

modern writers use the term *vena*, when speaking of the pulse.

An *artery* is a strong elastic ramifying tube, arising from the heart. The *arteries* are properly but two; they rise from the two ventricles of the heart; one of them is called **AORTA**, which see; the other is named the **PULMONARY ARTERY**, for it springs from the right ventricle of the heart, and is wholly confined to the LUNGS. See **BLOOD-VESSELS**.

The figure of an *artery* somewhat resembles a tree; the smaller ramifications of the *arteries* frequently anastomose with each other, as may be observed in the coats of an intestine when they are injected. The largest appearance of this kind is in the vertebral *arteries*, which unite in the skull. The use of the anastomosis is to keep up an equal circulation; they likewise serve to obviate the effects of local pressure.

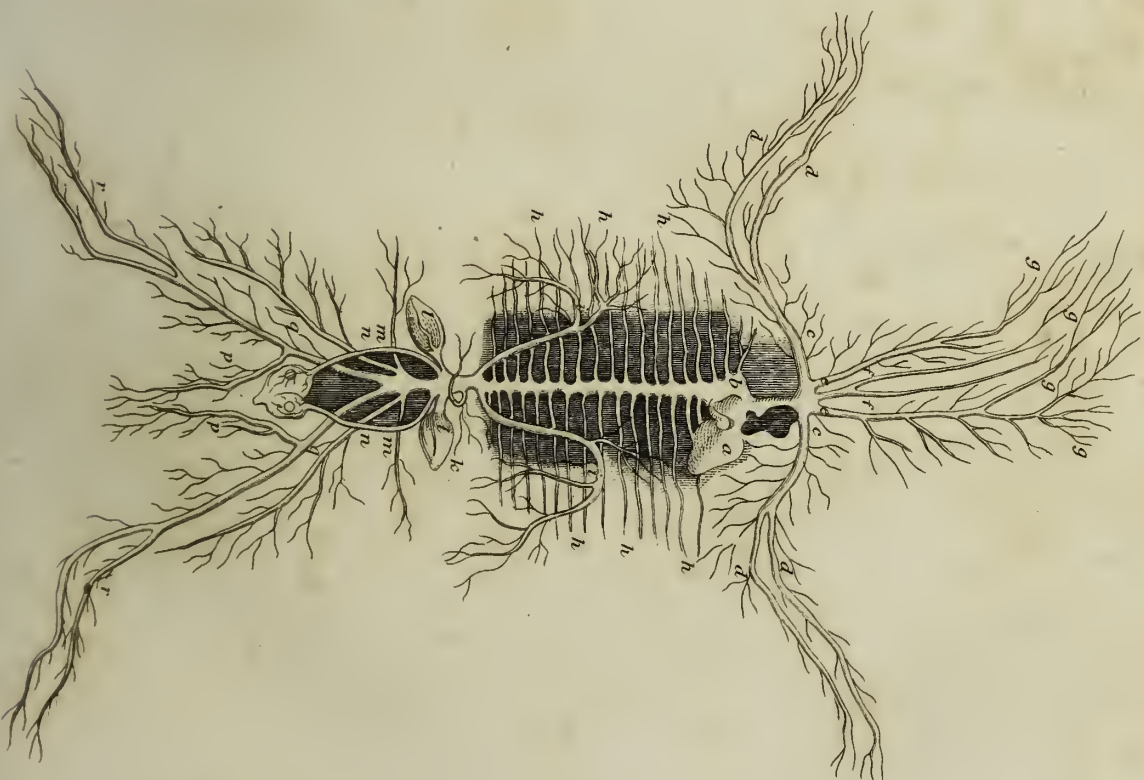
The *arteries* were formerly supposed to be of three sorts, viz. the *sanguine*, which circulated red blood; the *serous*, through which serum only was naturally conveyed; and the *lymphatic*, whose contents were lymph. It was also said, that if the blood was pushed into the serous vessels, it was there obstructed, and produced inflammation. But these erroneous notions have been long exploded; and it is now acknowledged universally, that these are all the same tube continued, which gradually divides into branches, and these branches grow smaller the further they are from the heart. Near to the heart the force of the circulation is stronger; and far from the heart the circulation lessens in its vigour, so that the thinner fluids only pass there. But if by exercise, or other means, the heat of the body is increased, the circulation is pushed forward, the red blood proceeds to parts where thinner fluids only circulated before; for the smaller vessels not being constructed to receive only such certain sized globules, can distend to the capacity required by such degrees of circulation as are occasionally happening, and contract again to their former dimensions as soon as the distending force is removed.

*Arteries* terminate three ways; the most common is that into the veins. Harvey discovered, or demonstrated, the circulation of the blood; but Malpighius first observed, that the last branches of an *artery*, running into minute divisions, dispose themselves on a membrane as on a firm base, and there open into one another by the mutual intercourse of small canals: he first traced out these canals through numerous mazes and windings, through which they convey the blood; but here the small branches, disposed with great nicety, extend over equal spaces, and

*Principal Veins in the Horse.*



*Distribution of the Arteries in a Horse.*







destitute of lateral shoots, as being no longer subdivided, changing their figure, constitute the origins of the veins. The next termination of *arteries* is into little cavities or sinuses, as into the corpora cavernosa penis, &c. The last is into excretory ducts.

The *arteries* generally lie deep, and always run on the inflected side of the limb, as in the axilla, the inner part of the cubit, &c. this situation prevents their being either stretched or compressed in the various motions of the body.

In the beginning of each of the large *arteries* before mentioned there are three valves, which prevent the return of the blood to the HEART. See BLOOD-VESSELS.

The *coats* of the *arteries* are three in number.

1. The *external*; it contains a great number of blood-vessels, and many nerves run through it; it is elastic, and its fibres run quaquaversim. 2. The *middle*; it is made of fibres which are disposed nearly circularly, and parallel to each other. 3. The *internal* is a thin membrane, whose surface is very smooth, to give an easy passage to the blood.

Notwithstanding the disputes which have occurred among anatomists, relative to the substance of these coats, it is pretty well understood that they are formed of muscular fibres and elastic ligaments, the inner being membranaceous; and that the muscular fibres themselves are possessed of elasticity, as well as the ligament.

The cellular membrane is improperly numbered among the coats of the *arteries*, for it is only the connecting medium.

The nearer to the origin the weaker are the arterial coats, whence the frequency of aneurisms in the beginning of the aorta.

*Arteries* are often met with of a serpentine form, but they are not so in a natural state of health, except during particular actions, &c. and then they recover their original state as soon as the temporary cause is removed. The cause is the dilatation; the coats are elastic, therefore whatever distends them must at the same time lengthen them, and thereby produce serpentine turns. This frequently happens in injecting the *arteries* of dead bodies: in the viper it is very apparent in an *artery* which runs along the outside of its lungs; every time that the heart beats this *artery* is seen in a serpentine form. The *arteries* of the uterus are more convolved in the last months of pregnancy than they were before conception; so far is the common observation from being true, that the uterine *arteries* have naturally a serpentine course, to admit of the enlargement of that organ in pregnancy, without stretching the *arteries*.

The *arteries* are liable to ossification, particularly the iliac and crural. This begins in the internal membrane, which first thickens, then grows spongy, by degrees becomes gristly, and at last like bone; and then the disorder extends to the outer coats.

The particular *arteries* may be seen under their respective names, and their general course is described under BLOOD-VESSELS, already referred to.

Wounds of the large blood-vessels are too frequently serious in the human subject, but in quadrupeds, and the more imperfect animals, they are more manageable. Where they cannot conveniently be taken up by ligature, they will contract on the application of styptics. See STYPTICS.

ARTICULARIS, VENA; called also *sub-humeralis*. Under the head of the os humeri, in the human subject, the basilic vein sends off this branch. It passes almost transversely round the neck of that bone from within backwards, and from behind outwards, and runs upon the scapula, where it communicates with the venæ scapularis externæ.

ARTICULATION (from *articulus*, a joint); *Arthrosis*; *coarcticulatio*; *aparthrosis*; *proarthrosis*; *assarthrosis*; *campe*; *junctura*; *commisura*, is the joining of bones together, and is of two kinds, viz. *articulation* and *connection*. *Articulation* is of two kinds; 1st, DIARTHROSIS. 2dly, SYNARTHROSIS. There is a species composed of these two, which some call AMPHIARTHROSIS. See each under their separate terms. CONNECTION is of three kinds. See SYMPHYSIS.

ARTICULUS (a dim. of *artus*), A JOINT; also *Arthron*. The diseases of the joints are LUXATION, SUBLUXATION, and ANCHYLOSIS, which see. The insertion of a number of tendons into the ligaments serves not only to strengthen it, but, by their action, to hinder it from being pinched in the motion of the limb, which is a mechanism observed in every joint of the animal. Wounds penetrating the joints are often serious, and require a particular treatment in the horse, &c. See CAVITY.

ARYTÆNO-EPIGLOTTICI. These are small fleshy fasciculi, each of which is fixed by one end in the head of one of the arytænoid cartilages, and the other in the nearest edge of the epiglottis; thence their name.

ARYTÆNOID CARTILAGES. See ASPERA ARTERIA.

ARYTÆNOID MUSCLES, the *lesser*, *oblique*, or *transverse*. These are situated on the back part of the arytænoid cartilage. They are



very small muscles which run upon the surface of the greater *arytenoid* muscles; they arise from that part of each of the cartilages *arytenoides*, next the cricoides on the other sides, and terminating in that part of the other or adjoining *arytenoidal* cartilage that is furthest from the cricoids on the other sides. Their use is to assist the *arytenoides majores* in their action, which is much strengthened by the manifest decussation of their fibres. The *arytenoides majores* are under the *arytenoides minores*. They have an insertion into the annular cartilage, and help to close the glottis. They arise fleshy from the *arytenoid* cartilages near their junction with the cricoid cartilages, and running transversely of an equal breadth, with straight fibres. They are inserted into the same side of the other cartilage. Their use is to shut the rimula, or chink called glottis, by bringing these two cartilages nearer one another.

**ARYTÆNOIDES**, or **ARETÆNOIDES** (from *αρυταννα* a funnel, *ειδος*, shape). Hence from the shape it takes the name. The *arytenoid*, or **EWER-LIKE CARTILAGE**. Called also *Guttalis*, *Gutturiformis*. An epithet of two cartilages, which, together with others, constitute the head of the larynx.

**ASSA-FETIDA**. *Andsjuden*. The **STINKING HEALER**. Also called *hingisch*, *laser*, *laserpitium*, *silphium*, *hin*, *hing*, *cyrenaicus succus*, *hindisch*, **DEVIL'S DUNG**. It is the fetid concrete juice of a plant which grows in Persia, and other parts of the eastern countries. Kempfer says, that the plant is a-kin to lovage, and that it is the root which yields the gummy juice. See Kempfer's *Amœnitates Exoticæ*. It is the juice of the *FERULA ASSA-FETIDA*, or *FERULA PERSICA umbellifera, foliolis alternatum sinuatis obtusis, floribus ex viridi luteis*. Class **PENTANDRIA**. Ord. **DIGYNIA**. LINN. Gen. Plant. 343. But from Dr. Hope's description of it in the *Philosophical Transactions*, vol. lxxv, it is thought probable, from the difference being so considerable, that *assa-fetida* may be produced by different species of the *ferula*. This juice is whitish at the first, but it gradually becomes brown, and grows harder also. The best pieces that are brought into Europe are of a pale and red colour, variegated with white. This gum hath a strong fetid smell, like that of garlic, and a nauseous bitter biting taste, but loses much by keeping. Its smell and taste reside in the resinous part; spirit is therefore the best to digest it in; though water extracts the greatest part of it by the aid of the gummy matter. In distillation with water, there is a strong impregnation, and thus a pale-coloured essential oil is re-

ceived; the remaining decoction affords a bitter extract.

As a medicine in human diseases it is justly esteemed. It is the strongest of all the deobstruent fetid warm gums; and more diaphoretic and expectorant than the gum ammoniacum. It acts as an anodyne and antispasmodic; though sometimes the addition of opium, or bark, greatly improves its efficacy, when used in veterinary practice as a remedy in epilepsies, and in palsies that succeed epilepsy in horses; proper evacuations being premised. It is very properly joined with salt of amber in the **ASTHMA**.

The official preparations are numerous, but the gum only is given to horses.

**ASARABACCA**; called also *nardus rustica*, *nardus montana*, **WILD NARD**, and **COMMON ASARABACCA**. The species in use is the *ASARUM EUROPÆUM, foliis reniformibus obtusis binis*. Class **DODECANDRIA**. Ord. **MONOGYNIA**. LINN. Gen. Plant. 589.

It is a low plant, without stalks, the leaves are stiff and roundish, with two little ears resembling a kidney, of a dark shining green colour, set on pedicles three or four inches long. The flowers consist of purplish stamina, standing in a cup, and are followed each by a capsule containing six seeds. It is perennial and evergreen, a native of the southern parts of Europe, and the warmer climes, and raised in our gardens. The dried roots are brought from the Levant, but those of our own growth are nearly as good.

The roots and leaves have a strongish, but not unpleasant smell, somewhat like that of nard, and a nauseous, bitter, acrid taste. They both have the same effect as a medicine; but when dry, three times the quantity may be given that is required of the fresh. Spirit of wine extracts its virtues, and infused in water it gives out a considerable portion of them. Boiled in water its virtues are destroyed, but not if boiled in wine.

Its use in veterinary practice is inconsiderable. Infusions of it are recommended by the old writers on farriery, to be thrown up the nostrils in the staggers, and other affections of the head, in horses. Its action is that of an **ER-RHINE**.

**ASCARIDES** (from *ασκνω*, to move about). So called from their continual troublesome motion. See **WORMS**.

**ASCITES** (from *ασκος*, *uter*, a water bottle); so called from the protuberance of the belly resembling that of a bottle. It is the **DROPSY** of the **BELLY**. When water is accumulated in the cavity of the belly, betwixt the peritonæum and

the viscera, in the dilated cavities of the glands or other parts contained in the abdomen, or in the duplicature of the peritonæum, it constitutes this disease, which, though frequent in the human subject, is rare in brutes. The name of dropsy is improperly given to the *anasarcous tumefaction* which takes place in the farcy, from which circumstance the latter is otherwise named the WATER-FARCY.

Mr. SNAPE writes on the DROPSY to the following effect, though we apprehend he alludes to the treatment of mere *anasarcous* affections. He says, the disease generally originates from an impoverished state of the blood, caused either by excessive labour, improper food, or mismanagement in respect to keeping. It also frequently proceeds from too sudden a transition from heat to cold, and from violent coughs, which too excessively attenuate the blood, and destroy the glutinous and balsamic particles; by which the serum becomes the most prevalent. An attention to the horse's diet is one great step towards the cure, and particularly if the malady derives its source from improper food, or from too violent exertion. His nourishment should be sweet bran, or white peas; and, for a change, oats and peas. To this prescription must be added the use of gentle exercise. For a medicine,

Take pulverised liver of antimony, one pound,  
Gum guaiacum, four ounces,  
Sarsaparilla in powder, Peruvian bark,  
of each four ounces,  
Powdered anniseeds two ounces,  
Linseed meal, Foenugreek powder, of  
each eight ounces;

Mix these ingredients together, and administer every night and morning a spoonful of this in the feed of bran and peas.

If (continues Mr. Snape) the disorder proceeds either from a violent cold or surfeit, prepare the following:

Take of sulphur,  
Gum guaiacum,  
Flour of mustard,  
Crocus metallorum,  
Æthiop's mineral, of each four ounces;  
Powder of sarsaparilla,  
Peruvian bark, of each eight ounces;

Mix all these articles together, so that they may form a mass with molasses. Of this give a bolus, of the size of a pullet's egg, every morning fasting; observing that, during this course of medicine, the chill must be taken off the water which he drinks, and he should have some flow and gentle exercise.

ASPERA ARTERIA (from *asper*, rough); called also TRACHEA (from *τράχης*, rough); so

called from the inequality of its cartilages. The *aspera arteria*, *trachea arteria*, or WINDPIPE, is formed of the LARYNX, the BRONCHIA, and the VESICULÆ MALPHIGIANÆ. The LARYNX hath five cartilages; it forms the upper part of the *aspera arteria*: the *first* of the cartilages is the THYROID, placed just under the basis of the os hyoides, of a quadrangular figure, and stands in the anterior part of the neck, where the pomum Adami is seen; the lateral portion runs back, and ends in two processes; one of which runs up, the other down, and are connected to the os hyoides; the *second* is the CRICOID, which stands beneath the preceding, and is of an annular figure: the back part stands between the two processes of the thyroid cartilage, to which it is articulated. It is narrow before, thick behind, and serves as a base to all the other cartilages; being, as it were, let into the thyroides; it is by means of this that the other cartilages are joined to the trachea, on which account it is immoveable. The *third* and *fourth* are the two ARYTÆNOID cartilages, joined to the superior and posterior parts of the cricoid, by peculiar articulations, that the glottis may the more readily be opened and contracted; each of these has a protuberance for the insertion of the muscles, which protuberance stands over the cricoid cartilage, and each have a process where the ligament of the epiglottis is fixed; they are small at their base, and large at their upper part. The *fifth* is the epiglottis, shaped like the leaf of a plant. It is joined to the anterior and superior part of the thyroid cartilage, over which it appears erected behind the root of the tongue, to which it is connected by ligaments fixed to the cornua of the os hyoides; it is also connected with the arytænoid cartilages. It covers the glottis whilst we swallow, to prevent any thing getting into it. These form the beginning of the *aspera arteria*, which passing down from behind the tongue into the lungs, is situated before the œsophagus, and surrounded, laterally and before, by the thyroid gland. It enters the cavity of the thorax behind the upper part of the sternum, where it is crossed by large vessels which run up to the head. At about the fourth vertebra of the back it divides into two branches; the other, which goes into the left, is divided into two; these branches are called BRONCHIÆ, and are divided again into numberless other ramifications, which are distributed through the substance of the lungs, and which consist of cartilaginous segments, and contractile membranes; then they are expanded into oblong vessels, after having lost their cartilaginous nature, called *Vesicula Malphigiana*; some say they terminate in



vesicles like clusters, which adhere to the small bronchial ramifications, constituting the chief part of the lungs. The use of the bronchia is to afford an ingress of air into the lungs, and a free return of it thence with such superfluous matter as is ready to be carried out of the body with it. The *aspra arteria* is cartilaginous forward, and membranous backward.

When any small substance falls into the trachea, it occasions much uneasiness until it is thrown up by coughing.

Mr. Richard Lawrence says, "The orifice of the trachea is frequently injured by the custom of pinching it with the hand, to discover, by the manner of coughing, whether or not a horse is sound in his wind. A case of this kind occurred during my residence at the VETERINARY COLLEGE. A horse was brought to the infirmary which was afflicted with an excessive difficulty of breathing, accompanied with a great noise from the nostrils, and a copious discharge of saliva from the mouth. As the horse eat and drank as usual, and in all other respects was in perfect health, it was suspected that the laborious respiration proceeded from some obstruction about the larynx, or at the entrance into the nasal cavities. To give immediate relief, Mr. St. Bel, who was at that time professor, performed the operation of BRONCHOTOMY, or, in other words, made an opening into the windpipe about four inches from the lower jaw. Into this opening a leaden tube was introduced, which was kept in its situation by a ligature round the neck. The animal was instantly relieved, and respiration was carried on entirely through this hole in the trachea. The tube was removed and cleaned every day, and the horse appeared perfectly easy in every respect for nearly three weeks, until the ligature happening to get loose in the night, the tube dropped out, and he was suffocated. On dissection, it appeared that the membrane lining the mouth of the windpipe was so thickened, as to have entirely filled up the cavity, and thereby prevented the air from passing and repassing freely."

ASPERA, LINEA in the *hinder extremity* of the horse. See SKELETON, and *g* in the plate there referred to.

ASPIC, OIL of, an essential oil obtained by distillation from the common broad-leaved or *spike* lavender. It appears, with a jumble of other drugs, in the random prescriptions of the old farriers, as a topical remedy. Among these it had the corrupted name of Oil of SPIKE, and for which the chemists usually have sold a disguised oil of turpentine.

ASS, a well-known animal, of the genus of

quadrupeds, belonging to the order of *Bellina*. This genus, according to Linnæus, comprehends the horse, the mule, the ass, the zebra, and the zuagga. They have six erect and parallel foreteeth in the upper jaw; the dog teeth are solitary, and at a considerable distance from the rest; and the feet of the hoof undivided.

The ass has long slouching ears, a short mane, the tail covered with long hairs at the end. The body is usually of an ash colour, with a black bar crossing the shoulders, and extending downwards.

1. The *Koulan*, or ass in a wild state, which is the *onager* of the ancients, varies from the tame ass in several respects, and requires a more particular description. The forehead is very much arched; the ears are always erect, sharp pointed, and lined with whitish curling hairs; the irides are of a livid brown; the lips thick; and the end of the nose sloping steeply down to the upper lip: the nostrils are large and oval. It is much higher on its limbs than the tame ass, and its legs are much finer, but it again resembles it in the narrowness of its chest and body; it carries its head much higher; and its skull is of a surprising thinness. The mane is dusky, about three or four inches long, composed of soft woolly hair, and extends quite to the shoulders: the hairs at the end of the tail are coarse, and about a span long. The colour of the hair in general is a silvery white; the upper part of the face, the sides of the neck and body, are of a flaxen colour; the hind part of the thighs are the same; the fore part divided from the flank by a white line, which extends round the rump to the tail: the belly and legs are also white: along the very top of the back, from the mane quite to the tail, runs a stripe of bushy waved hairs of a coffee-colour, broadest above the hind part, growing narrower again towards the tail; another of the same colour crosses it at the shoulders (of the males only), forming a mark, such as distinguishes the tame asses: the dorsal band and the mane are bounded on each side by a beautiful line of white, well described by Oppian, who gives an admirable account of the whole. Its winter coat is very fine, soft, and silky, much undulated, not unlike the hair of the camel; greasy to the touch; and the flaxen colour, during that season, more exquisitely bright. Its summer coat is very smooth, silky, and even, with exception of certain shaded rays that mark the sides of the neck, pointing downwards.

These animals inhabit the dry and mountainous parts of the deserts of Great Tartary, but not higher than lat. 48. They are migratory,

and arrive in vast troops to feed, during the summer, in the tracks east and north of lake Aral. About autumn they collect in herds of hundreds, and even thousands, and direct their course towards the north of India, to enjoy a warm retreat during winter. But Persia is their most usual place of retirement, where they are found in the mountains of Casbin, some even at all times of the year. If we can depend on Barboga, they penetrate even into the southern parts of India, to the mountains of Malabar and Golconda. According to Leo Africanus, wild asses of an ash-colour are found in the deserts of northern Africa. The Arabs take them in snares, for the sake of their flesh. If fresh killed, it is hot and unfavourable: if kept two days after it is boiled, it becomes excellent meat. These people, the Tartars and Romans, agreed in their preference of this to any other food: the latter indeed chose them young, at a period of life in which it was called *Lalishio* (vide *Martial*. xiii. 97.). The epicures of Rome preferred those of Africa to all others. The grown onagri were introduced among the spectacles of the theatre; and their combats were preferred even to those of the elephants.

The manners of the wild ass are very much the same with those of the wild horse and the dishikketei. They assemble in troops under the conduct of a leader; and are very shy. They will, however, stop in the midst of their course, and even suffer the approach of man at that instant, but will then dart away with the rapidity of an arrow sent from a bow. This Herodotus alleges in his account of those of Mesopotamia; and Leo Africanus, in that of the African wild ass.

They are extremely wild. Holy writ is full of allusions to their savage nature. "He scorneth the multitude of the city, neither regardeth the crying of the driver," Job, xxxix. 7. Yet they are not untameable. The Persians catch and break them for the draught: they make pits half-filled with plants to weaken the fall, and thus take them alive. They break, and hold them in great esteem, and sell them at a high price. The famous breed of asses in the east is produced from the koulán reclaimed from the savage state, which highly improves the breed. The Romans reckoned the breed of asses produced from the onager and the tame ass to excel all others. The Tartars, who kill them only for the sake of the flesh and skins, lie in ambush and shoot them. They have been at all times celebrated for their amazing swiftness; for which reason the Hebrews called them *Pere*; as they styled them *Arod*, from their braying. Their

food is the saltiest plants of the deserts, such as the kalis, atriplex, chenopodium, &c.; and also the bitter milky tribe of herbs: they also prefer salt water to fresh. This is exactly conformable to the history given of this animal in the book of Job; for the words "barren land," expressive of its dwelling, ought, according to the learned Bochart, to be rendered "salt places." The hunters lie in wait for them near the ponds of brackish water, to which they resort to drink: but they are not of a thirsty nature, and seldom have recourse to water. These animals were anciently found in the Holy Land, Syria, the land of Uz or Arabia Deserta, Mesopotamia, Phrygia, and Lycaonia. But at present they are entirely confined to the countries above mentioned. Chagrin, a word derived from the Tartar *foghré*, is made of the skin of these animals, which grows about the rump, and also that of horses, which is equally good. There are great manufactories of it at Astracan and in all Persia. It is a mistake to suppose it to be naturally granulated, for its roughness is entirely the effect of art. The Persians use the bile of the wild ass as a remedy against dimness of sight.

2. The tame or *domestic ass* is a humble, patient, and tranquil animal. He submits with firmness to strokes and chastisement: he is temperate both as to the quantity and quality of his food; he contents himself with the rigid and disagreeable herbage which the horse and other animals leave to him and disdain to eat: he is more delicate with regard to his drink, never using water unless it be perfectly pure. As his master does not take the trouble of combing him, he often rolls himself on the turf among thistles, ferns, &c. Without regarding what he is carrying, he lies down to roll as often as he can, seeming to reproach his master for neglect and want of attention. When very young, the ass is a gay, sprightly, nimble, and gentle animal. But he soon loses these qualities, probably by the bad usage he meets with; and becomes lazy, untractable, and stubborn. When under the influence of love, he becomes perfectly furious. The affection of the female for her young is strong: Pliny assures us, that when an experiment was made to discover the strength of maternal affection in the she-ass, she ran through the flames in order to come at her colt. Although the ass be generally ill used, he discovers a great attachment to his master; he smells him at a distance, searches the places and roads he used to frequent, and easily distinguishes him from the rest of mankind. The ass has a very fine eye, an excellent scent, and a good ear.



When overloaded, he hangs his head, and sinks his ears: when too much teased or tormented, he opens his mouth and retracts his lips in a disagreeable manner, which gives him an air of ridicule and derision. If you cover his eyes, he will not move another step; if you lay him on his side, and place his head so that one eye rests on the ground, and cover the other with a cloth, he will remain in this situation without making any attempt to get up. He walks, trots, and gallops in the same manner as the horse; but all his motions are slower. Whatever be the pace he is going at, if you push him, he instantly stops.

The cry of the horse is known by the name of *neighing*; that of the ass, by *braying*, which is a long, disagreeable noise, consisting of alternate discords from sharp to grave and from grave to sharp; he seldom cries but when pressed with hunger or love: the voice of the female is clearer and more piercing than that of the male.

The ass is less subject to vermin than other animals covered with hair; he is never troubled with lice, probably owing to the hardness and dryness of his skin; and it is probably for the same reason that he is less sensible to the whip and spur than the horse. The teeth of the ass fall out and grow at the same age and in the same manner as those of the horse; and he has nearly the same marks in his mouth. So much for the natural history of this animal; we shall now speak of his particular qualities.

The horse is trained up; great care is taken of him; he is instructed and exercised; while the poor ass is left to the brutality of the meanest servants, and the wantonness of children, that so far from improving, he must be a loser by his education; and indeed, had he not a large fund of good qualities, the manner in which he is treated is sufficient to exhaust them. He is the sport, the butt, and the drudge of the vulgar; who, without the least thought or concern, drive him along with a cudgel, beating, overloading, and tiring him. We do not remember, that, if there were no horses, the ass would be considered, both with regard to himself and us, as the most useful, most beautiful, and most distinguished of animals. Instead of being the first, he is now the second; and from this accident alone he is held in no estimation. It is the comparison that degrades him: he is considered, not in himself, but relatively to the horse. We forget that he is an ass; that he has all the qualities of his nature, all the gifts annexed to his species; and think only on the figure and qualities of the horse which are wanting in him, and which it would be improper for him to have.

By his natural temper he is as humble, as pa-

tient, and as quiet, as the horse is proud, fiery, and impetuous; he bears with firmness, and perhaps with courage, blows and chastisements. He is sober both with regard to the quantity and quality of his food, contenting himself with the most harsh and disagreeable herbs, which the horse and other animals will not feed on. In water he is very nice, drinking only of that which issues from rivulets and brooks with which he is acquainted.

The ass, though a contemptible creature, is very serviceable to many that are not able to buy or keep horses; especially where they live near heaths or commons, the barrenest of which will keep them, being contented with any trash, dry leaves, stalks, thistles, briars, chaff, and any sort of straw is excellent food for them; they require very little looking after, and will sustain labour, hunger, and thirst, beyond most creatures. They are seldom or never sick; and endure longer than any other creature. They may be made use of to plough light lands, to carry burdens, to draw in mills, for which they are very excellent, to fetch water, or any other odd things. They are very useful for their milk, which is an excellent restorative in consumptions, and other weaknesses: but they would be of much more advantage were they used, as they are in foreign countries, for the breeding of mules. See the article MULE.

Asses are capable of propagating when two years old. The females are in season during the months of May and June. The milk appears in the dugs ten months after impregnation; she brings forth in the twelfth month, and always one at a time. Seven days after the birth, the season of the female returns, and she is again in a condition to receive the male. The colt should be taken from her at the end of five or six months, that the growth and nourishment of the foetus may not be obstructed. The stallion or jack-ass should be the largest and strongest that can be found; he should be at least three years old, and never ought to exceed ten. The ass, like the horse, takes three or four years in growing, and lives till he be 25 or 30: he sleeps less than the horse, and never lies down to sleep but when excessively fatigued. He is more robust, and less subject to diseases, than the horse.

Travellers inform us that there are two sorts of asses in Persia: one of which is used for burdens, as being slow and heavy; the other is kept like horses for the saddle; for they have smooth hair, carry their heads well, and are much quicker in their motion; but when they ride them, they sit nearer their buttocks than

when on a horse: they are dressed like horses, and are taught to amble like them; but it is usual to cleave their nostrils, to give them more room for breathing. Dr. Russel likewise tells us they have two sorts in Syria; one of which is like ours; and the other very large, with remarkably long ears; but they are both put to the same use, which is, to carry burdens.

In America there were originally no asses at all, nor yet horses: but they were carried thither long ago, at first by the Spaniards, and afterwards by other nations, where they multiplied greatly; insomuch, that, in some places, there are whole droves of them that run wild, and are very hard to be caught. Asses in general carry the heaviest burdens in proportion to their bulk; and, as their keeping costs little or nothing, it is a great wonder that they are not put to more uses than they generally are among us. The flesh of the common ass is never eaten in these parts of the world; though some pretend their colts are tender, and not disagreeable. The *diseases of the ass*, as far as we know, bear a general resemblance to those of the horse. As he is more exposed, however, and left to live in a state more approaching to that which nature intended, he has few diseases. Those few, however, are less attended to than they ought to be; and it is for the veterinary practitioner to extend to this useful and patient animal the mercies of his art, in common with other animals, whose preservation is more an object with those to whom they belong.

**ASSES, choice of, and time of covering.** Choose the largest and fairest, as well as the strongest in proportion of limbs, and of a sound constitution; if they are not found, it is denoted by the hanging of the ears, dulness of the eyes, and shortness of breathing; asses with either of these imperfections should be rejected. The male should be at least three years old; from thence to ten he will be sufficiently serviceable, but, when past that age, declines. The female at two years old will bring forth fine lusty colts, though, for a strong labouring breed, you may suffer her to be two years and a half or three years old before she takes the male; and when she has been covered let her be walked about for the space of an hour, or an hour and an half, that she may be refreshed. She brings forth her foal in a twelvemonth, but, to preserve a good breed, she should not produce more than one in two years. The best time of covering is from the latter end of *May* to the beginning of *June*, nor must the female be hard worked whilst with foal, for fear of casting; but the

more the male is worked, in moderation, the better he will thrive, as it takes away his lecherous disposition.

**ASSES, ordering of, breaking, &c.** When the foal is cast, it is proper to let it run a year with the dam, and then wean it by tying up and giving it grass, and sometimes milk; and, when it has forgot the teat, turn it out into pasture; but, if it be in winter, you must then feed it at times, till it be able to shift for itself.

At two years old break him, or if he be of a good growth let it alone still longer, till three years; and this may be easily done by laying small weights on his back, and increasing them by degrees; then set a boy upon him, and so increase the weights as you think fit, till it is sufficient for him to bear. These creatures above all things delight not in wet, and very nicely touch the water in drinking, as if they feared it, which some attribute to their seeing the shadow of their ears in the water, which affrights them, but we attribute it rather to their natural constitution. They are often troubled with dreams, which make them moan and cry out in their sleep, proceeding from much melancholy, to which they are greatly inclined; and indeed travelling and lying in the wet is a great injury to them, and from it proceed most of the diseases they are afflicted with. Put them not up in strait rooms, lest in their dreams they beat and bruise themselves against the sides of them, for indeed they require large rooms and hilly ground.

**ASSIMILATION** (from *ad*, and *similo*, to make like to), a process carried on in the stomachs of men and animals, by which one kind of nutritious matter is drawn from different kinds of food. In this sense assimilation is subordinate to *nutrition*; but the term is also used to denote those morbid changes which healthy fluids undergo, by mixture, or contact, with those that are diseased; and by which the former are rendered *similar* in their nature and effects to the latter.

**ASTHMA**, an impeded and very laborious respiration in an animal; accompanied with much anxiety and straitness of the præcordia; preventing a free circulation of blood through the lungs, and threatening suffocation. It is either *moist* or *dry*. The moist, is when there is a free discharge of matter by the lungs and nostrils in consequence of coughing; the dry, is when the cough though incessant and harassing, produces little or no discharge.

1. The *moist asthma* is a cough that proceeds from a load of phlegm, or of slimy matter, dis-



charged into the air-vessels of the lungs, occasioning difficulty, and sometimes great oppression, in breathing. It is manifested, in the horse, by the following symptoms: the flanks have a sudden and quick motion; the breathing is short, but without the nostrils being open, as is observed in horses that are feverish or broken-winded. He first wheezes some time, and rattles in his throat; then he coughs; and this cough is sometimes dry, at others it is moist. He frequently snorts after coughing, and throws up pieces of phlegm through the mouth or nose: and after drinking he frequently does the same. He also does the same at the beginning and ending of his exercise: this discharge gives him considerable relief. Some horses wheeze so excessively, and are so extremely short-winded, that they cannot easily move until they have been gently exercised for some time in the air; though after that they will go through their work very well.

This moist asthma should carefully be distinguished from that purfiveness and thick-windedness which full or foul feeding occasions; also from the same symptom when it is occasioned by a want of exercise, or taking up a horse from winter-grass; in which cases the former is cured by a decrease, and the latter by an increase, of feeding.

Asthmatic complaints, whether the moist or the dry, are usually tedious and obstinate; but if the horse is young, and the disease not of long standing, a recovery is sometimes brought about.

If the horse is too full of blood, bleed freely, and repeat the operation as often as the oppression and the difficulty of breathing may require: if his blood is poor, proportionably less should be taken away; and, unless the case be very urgent, bleeding may be omitted. Give, overnight,

*The Calomel Bolus.*

Take of calomel, two drachms;

Honey, a sufficient quantity to make a bolus.

The next morning give the following purging ball:

Take half an ounce to six drachms of aloes,

Gum ammoniacum,

Asia-fetida,

Galbanum,

Oil of anniseeds, of each two drachms;

Treacle, enough to make them into a ball.

This bolus and purging ball may be repeated at due distances of time, and on the days after

purging give every morning one of the following pectoral balls.

*Pectoral Ball.*

Take of the cordial ball (see BALL) half an ounce,

Powdered squills,

Barbadoes tar (or, in its stead, common balsam of sulphur), of each two drachms:

Make them into a ball, for one dose. Or,

Take gum ammoniacum,

Asia-fetida,

Galbanum,

Liver of antimony, of each two ounces,

Fresh squills, enough to form a paste;

Make this into balls of from one to two ounces each, according to the greater or less violence of the disease.

2. The *dry asthma*, called also the nervous asthma, is a cough proceeding from some irritation on the nerves in the membranous part of the lungs and trachea; but there is not any thing discharged by it except a little clear water from the nose, notwithstanding the violence of the cough, and its continuance when once begun, which for some time is almost incessant: the coughing-fits have no regular return; they are more frequent in walking than in other exercise, except when suddenly stopped after hard riding, &c. on which occasion the cough is very troublesome; after drinking it is troublesome too: and a change of weather will sometimes make it very teasing for two or three days; but it is generally worst in the morning. Sometimes, when no particular circumstance occurs to disorder the horse, the cough will be seldom heard for a week or two together: and yet, though this cough is so teasing, the horse eats heartily, hunts, and performs his business very well: if he is tolerably treated, he keeps a good coat, and maintains most of the usual signs of health.

At eight years of age the dry asthma commonly makes its appearance. The cough may begin at four or five, and at times be very violent; but at eight, and after, he labours with his flanks, and that in the greatest degree after feeding: he hath now an almost constant working of his nostrils, and a motion of his fundament; after which it usually terminates in broken wind; or in death.

Bleeding in moderate quantities is more or less necessary, according to the strength of the horse, and the difficulty of breathing; after which give the calomel bolus at night, repeat it the next night, and on the morning following.

work them off with the purging ball above mentioned.

During the operation of these medicines, it is necessary to keep the horse well clothed and littered: and he should be well supplied with scalded bran and warm water.

After the second purge give one of the following balls every morning, letting him fast two hours after each, and continue their use for two months, or longer.

#### *Asthmatic Balls.*

Take antimony, finely levigated, half a pound;  
Gum guaiacum, four ounces;  
Myrrh,  
Gum ammoniacum, of each two ounces;  
Venice soap, half a pound;  
Honey, enough to make a mass.

Of this about two ounces may be taken for one ball. Or,

Take gum ammoniacum,  
Fresh squills,  
Venice soap, of each four ounces;  
Anisated balsam of sulphur, one ounce.

Make them into a mass. About two ounces of this may be made into a ball.

If the disease be obstinate, the bolus with calomel may be repeated at proper intervals, with or without the purge, taking care that it does not salivate.

3. These means are also proper when a horse *wheezes*, and continues *thick-winded*, and with a cough, even when he has recovered his appetite after an obstinate cold. They will seldom fail to do good, if the horse be free from a consumption, and not old. But, though violent exertion is of all things to be avoided, and for obvious reasons, in asthmatic complaints, yet, nothing conduces more to the cure of the moist species of asthma in the horse, than moderate exercise in the open air. By this only, when given with judgment, many horses have been cured, without the help of physic, even when they have been so bad, that upon their first setting off they could hardly go a mile in an hour. Indeed, where exercise is wanting, all other remedies, in certain cases, will avail but little. And here all the general rules and cautions that are given, concerning FOOD and EXERCISE, either after sickness or any chronic distemper, ought carefully to be observed, *viz.* that their exercise be, as much as possible, in the open air; that it be proportioned to the horse's strength and constitution; and particularly, that it be gradual, only walking while the oppression remains, suffering him to mend his pace, not by compulsion, but of his own accord.

With respect to a *thick wind*, when it is the effect of an asthma, and is become a chronic distemper, the following circumstance will very much distinguish this case from others. Horses in this state are seldom off their stomachs, but, on the contrary, are for the most part *foul feeders*, and naturally robust and strong, unless after a fresh cold, or violent oppressive paroxysm. Except at such times, they will endure exercise and labour, as well as horses that are perfectly sound, if the persons intrusted with them have skill and discretion enough to manage them; and the more they are kept to exercise, and the longer they are continued in it, the faster they mend. On the other hand, a horse after sickness, being usually faint and weak, and, for the most part, low in flesh, is able to endure but little at first, perhaps to be walked a quarter of an hour, or half an hour, and so by degrees a longer space, until he recovers his full strength. This is sufficiently known to all that have had experience, so that in order to prevent their being hurt by their exercise, we need only direct that their feeds should be small, and often, and well-timed. A horse that is subject to oppression and short-breathing, should never be suffered to have his stomach distended with large quantities of meat and water, for a distended stomach will press so much upon the diaphragm, as to hinder respiration. The quantity of food too increases the determination of blood to the lungs, which must greatly increase the inconvenience; and if a horse happens to be injudiciously exercised in this condition, it must endanger suffocation and sudden death, or else by rupturing the small blood and air vessels of the lungs, render him incurable.

The best way with such horses as are affected with asthmatic complaints, is to abridge their hay, and also to give it them in small quantities, for large quantities of hay keep the stomach too much distended, and hinder the action of the lungs. Their corn should also be divided; what is usually given at twice being made into three or four portions, and likewise moistened with water; which is an excellent practice in all such cases. Those persons run to great extremes who restrain thick-winded horses so much from water as many do. They should be suffered to drink oftener than others, only not to fill their stomachs with it, as they would if allowed their full liberty, but we should give them small draughts and often; and the benefit of this is plainly proved by this circumstance, that such horses, often in drinking or soon after, throw up large quantities of phlegm from the lungs, which gives them great relief, and is always a



good sign, if not an indication of perfect recovery. Many horses having all the symptoms of asthma to a great degree, and for a long continuance, have nevertheless recovered to do much service, only by good regulations in their manner of feeding and exercise.

On dissecting horses that have laboured under the dry asthma for some time, the heart and the organs of respiration appeared somewhat enlarged: which preternatural enlargement is an effect of the continual labouring with the breath, and not the cause of the disease, as some have supposed. See BROKEN WIND and COUGH.

**ASTRAGALUS** (from *αστραγάλος*, a cockal or die. So called because it is shaped like the die used in ancient games). The **ANKLE**, or **SLING BONE**, *ballista os*. *Aristrius*, the *talus*, called also *quatrio*; *tetreros*; *bavicula*; *cavilla*; *diabebos*; *peza*, or first bone of the foot; so named from its being used in ancient sports, or something of that shape, called **COCKAL**, in like manner with our dice, and going by the same name.

In the human subject it is the upper bone of the foot; the tibia rests upon it; its upper and under side are covered with cartilage, and on its under side it articulates with the os calcis; the fore part of this bone is cartilaginous, and there it articulates with the os scaphoides.

For some account of this bone in the horse, see *ANATOMY of the HORSE*, description of the inside of the left lower limb, 8, 9, 9, and the plate there referred to.

**ASTRAGALUS**, is also a name for the **LIQUORICE VETCH**. See **OROBUS**, and **GLAUX VULGARIS LEGUMINOSA**.

**ASTRINGENTS** (from *astringo*, to bind). **ADSTRINGENTIA**; called also *anastaltica*; *constringentia*.

The solid parts of the machine both in men and brutes, from various morbid causes, are sometimes so preternaturally relaxed, that they become weak and flaccid, unfit to perform properly their natural functions. It seems necessary, therefore, that there should be such remedies as can correct such debility and relaxation, and bring back the solids to their former healthful standard. Remedies of this sort among veterinary practitioners are called *astringents*. That many materials have the power of condensing, giving firmness, and strengthening the solid parts of animal bodies, is proved from daily experience, especially that common and well-known art of tanning and preparing leather by oak-bark, and other things similar, until it acquires a remarkable hardness and firmness.

We are taught from reason, and experience hath clearly demonstrated, that many things can

excite a similar power by some means or another upon the living machine. But the mode by which this is performed seems not to be properly understood—whether, according to the opinion of some, by the interposition of the particles of new matter between those of the old, which may connect them more strongly, and therefore make the whole compages firmer;—or, as is more agreeable to others, little or no new matter being added, by only constringing the bonds of adhesion of the former particles, which, being thus brought into nearer contact, render the matter firmer. However, concerning a matter so obscure and uncertain, it is surely better not to form any conjectures, than to perplex ourselves with a variety of opinions which are neither accurate nor capable of properly explaining the business. Still, it is an indisputable fact, that the solids of the machine are capable of being rendered firmer, by the particles of which they consist being drawn only into closer contact with each other, without any, even the smallest, change of their composition; and sometimes also by the moister particles, by which they had been rendered soft, being dissipated. But whether astringents produce this effect in a similar manner, or by any mode altogether different, it is of little consequence, so long as the effect itself is certain, and the nature and administration of them sufficiently clear. Dr. CULLEN says, that, “by the corrugation and constriction of the whole mouth and fauces, from a small portion of astringents being applied to a small part of the tongue, that astringents act upon the sentient nerves; and, that taken into the stomach, they shew their effects in other parts of the body so quickly, that they can hardly be supposed to have passed the stomach itself; and, therefore, their sudden effects, in distant parts, must be ascribed to an astringent power communicated from the stomach to those distant parts.” From all which it is conclusive, that astringents act *topically*, and *sympathetically*; the first by exerting their efficacy equally upon the dead, and living flesh; the second, by rousing the living principle, or nervous energy, from their stimulus, or mitigating too powerful action by their sedative influence.

Hence, astringents, as they are medicines suited to increase the cohesion, and produce some contraction in the simple solids, and moving fibres of the animal body, are applicable in cases where the muscular fibres have been stretched, as in bruises and strains; in these cases, *astringents* are used at the beginning, as sedatives, to abate inflammation, and also as *astringents*, to restore the lost tone of the parts; and after the

removal of inflammation, they are continued only as tonics. *Astringents* are sometimes useful for checking too great secretions, which effect they generally produce in consequence of their acting more powerfully on the small vessels in constricting, than on the larger vessels in increasing the impetus of the circulation. In hæmorrhagics, *astringents* have been employed with advantage, but the advantage is in passive hæmorrhagies only; for when there is a strong action of the vessels, *astringents* would be very insufficient. *Astringents* are often useful for lessening morbid irritability and sensibility; for they act not only on the simple fibre, but also on the living power: morbid irritability is best removed by a moderate use of *astringents*.

When sudden changes are to be produced, give the fossil *astringents*; when irritability or other habitual disorders are to be removed, use vegetable and metallic *astringents*; they are the most powerful, and exceed alum in activity and efficacy: diluted solutions of metals, externally applied, are anti-inflammatory and sedative, whilst stronger solutions inflame, and are powerful caustics.

During inflammation, or an inflammatory diathesis, avoid the use internally of *astringents* that have a degree of stimulus; avoid all *astringents* when the blood tends too much to the head; avoid *astringents* during a sanguine plethora, or obstructions in the viscera.

Vegetable *astringents* are generally distinguished by a rough austere taste, and by the property they possess of changing solutions of iron, especially those made with the vitriolic acid, to a dark purple or black colour; but these criteria are not without restriction, when considered with respect to the application of those medicines to the living fibre. They yield their virtue to water by infusion, and also to a spirit in a less degree: by distillation they afford nothing, nor to oils do they impart any of their qualities. Extracts made from *astringent* vegetables do not keep long. Some vegetable *astringents* are antiseptic, by their fixed air correcting the putrescent tendency of the blood, and by the tonic power of these drugs on the solids, by which they oppose spasm.

Dr. Percival, in his *Essays Medical and Experimental*, observes, that *astringents*, acids, and bitters, neutralise each other; that vegetable acids lessen their astringency externally, but mineral acids increase it both internally and externally. Vegetable *astringents* are the most powerful, as medicines; and of these, one of the strongest is galls. See GREGORY'S *Conspectus Medicinæ*, and CULLEN'S *Materia Medica*.

The employment of *astringents* topically, is well known to be attended with advantage. Thus, solutions of ALUM, vitriolated ZINC, and other metallic salts, are of use in removing local inflammations, and when applied in a more concentrated form, are capable of giving tone to parts that have been overstretched. Hence they are had recourse to in veterinary practice for the removal of the lameness arising from violent sprains and bruises, being most properly used when the inflammation is gone off.

Mr. St. BEL says, "*Astringents* are most commonly the remedies employed to produce a revulsion of the humours. These succeed, if the accident is not violent, and they are applied immediately; but if two or three days are allowed to elapse after the accident, before they are applied, they, on the contrary, fix the humour in the part, and coagulate it; constrict the vessels, check the circulation, and at length occasion indurations, the effect of the concretions of the fluids."

**ATHEROMA** (from *αθηρα*, *pulse*, *pap*, or a kind of *poultice*). It is a kind of tumor, thus named from its poultice-like contents. See **NEVUS**.

**ATLAS** (from *ατλαν*, *to sustain*, or *σκλημι*, *to carry*). The name of the first vertebra of the neck; so called in the human subject because it sustains the head, as Atlas was supposed to sustain the earth: but in the brute skeleton the term is not so appropriate. It is a bony ring, and in its back part it receives the processus dentatus of the second vertebra; it hath no spinal process; its transverse processes are very thick; instead of the two superior oblique processes, which the other vertebræ have, there are two oblong holes which receive the condyles of the os occipitis, and the inferior oblique processes are horizontal to admit of rotation. See *Bones of the Neck* under the article **SKELETON of the HORSE**.

**ATMOSPHERE** (from *αἶμος*, *vapour*, and *σφαῖρα*, *a circle*). See **AIR** and **AZOTE**.

**ATOM** (from *α* neg. and *τεμνω*, *to cut or divide*), a particle of matter so small as not to admit of any further division. Asclepiades taught that *atoms* were the primordia of all things, and that they were not perceptible to our senses, but only to our understandings; that they had no qualities, for the qualities of bodies which they compose depend on the order, figure, number, &c. of many *atoms* joined together; and this last circumstance he proves by observing, that a lump of silver is white, but if filed down it is black; and horns of goats are black when whole, but white if filed down. Galen says,



that Asclepiades, adhering to the sentiments of Democritus and Epicurus, with regard to the principles of bodies, had only changed the former names of things, calling *atoms* molecules, and a vacuum, pores. Molecules were divisible, but *atoms* not,

**ATONY** (from  $\alpha$  neg. and  $\tau\epsilon\sigma\tau\omega$ , *to stretch*), the defect of muscular power in an animal: *relaxation*, laxity, debility, or distemperature. This word was much in use formerly among the methodic sect, who ascribed the causes of all distempers to relaxation, stricture, or a mixture of these. It is generally synonymous with palsy, or the loss of power in living parts. Dr. Cullen attributes FEVER in part to the existence of *atony* in the extreme vessels.

**ATROPHY**, *Atrophia* (from  $\alpha$ , and  $\tau\rho\epsilon\phi\omega$ , *to nourish*), a wasting, with loss of strength, in a living animal; but without a hectic fever.

We may presume so far on the general analogy existing between man and the brute creation, as to conclude, that a knowledge of this subject may eventually be of use to the veterinary practitioner, notwithstanding the known fact that the diseases of those animals on which he exercises his art, are, for the most part, *exceedingly simple*. We shall here exhibit the subject as it appears in the human subject, and leave it to the ingenuity of the reader to extract and apply what is suitable to his own particular purposes.

Dr. CULLEN on this remarks, that an atrophy perhaps is never without fever; at least the pulse is quicker than usual; but the absence of the *true hectic fever* distinguishes this disease from the tabes. Some say that in an *atrophy*, the fat only is wasted. The Latins call it *innutritio*, the want of nutrition. It is also called a nervous consumption. Dr. Cullen ranks this genus of disease in the class *CACHEXIE*, and order *MARCORES*. He enumerates four species. 1. *Atrophia inanitorum*, from too great evacuations; also *tabes nutricum*;—*sudatoria*;—*a sanguifluxu*. 2. *Atrophia famelicorum*, from deficient nourishment. 3. *Atrophia cacochoymica*, from bad nourishment; also *tabes syphilitica*;—*ab hydropse*. 4. *Atrophia debilium*, when the function of nutrition is so depraved as to be productive of disorder where too excessive evacuation or cacochoymia has not preceded. The atrophy of children is called *paidatrophia*. Whether with the first or fourth species is to be classed the tabes dorsalis, seems doubtful; CULLEN thinks the last.

An *atrophy*, from whatever it may arise, has for its proximate cause a defective exertion of the assimilating powers of the constitution, or an impediment to the application of their effects,

by which even the functions of the machine ordained for the support becomes its destruction, from the mere want of proper nutrition. The disorder, therefore, had better be considered of one kind, brought on by different causes, tending to the same end.

The causes are, a weakness in the organs of digestion, whence an undue supply of chyle to the blood; a diet that affords insufficient nourishment; a tenderness and irritability of the nervous system; a defect of, or an excoriation of the mucus, which defends the inner surfaces of the heart and arteries; excesses of the passions; and in luxurious pursuits, too copious evacuations, &c.

The signs in the beginning are, a decrease of strength, loss of appetite without much fever, cough, or short breath, though in the progress, when a consumption of the flesh hath gradually affected the whole habit, there is some degree of difficulty in the breathing; the urine is inconstant in its colour, though generally high, and small in quantity; sometimes it is pale and profuse; in time the blood grows hot and acrid for want of its due supplies, a febrile heat increases, as also a cough and difficulty of breathing. In children this disease frequently happens: and, besides the above-mentioned causes, they are subject to it from a sudden change from the breast to more solid food; in which case their legs become pendulous, the habit flaccid, their skin corrugated, and, in many instances, their appetite for food is almost insatiable. As a weakness in their chylopoetic organs is the cause, so on dissecting those patients after death, their mesenteric glands are tumefied, their livers much disordered, their intestines filled with black fetid fordes, and the muscles of their bellies extenuated almost to membranes.

**ATTAIN**, among farriers, signifies a knock or hurt in a horse's leg, proceeding either from a blow with another horse's foot, or from an over-reach in frosty weather, when a horse being rough-shod, or having shoes with long calkers, strikes his hinder-feet against his fore-legs.

The farriers distinguish upper attainments given by the toe of the hind-foot upon the finew of the fore-leg; and lower attainments, or over-reaches, on the pastern joint, which are little bladders like wind-galls, occasioned either by a wrench, a strain, or an over-reach. The usual place is in the heel or frush.

The cure vulgarly prescribed in each of these cases, is as follows: "When the hurt proceeds from a blow with another horse's foot, wash away the filth with vinegar and salt, and cut off the loose pieces of flesh; then apply

to the part a hot egg boiled hard, cut through the middle, and sprinkled with pepper. In an over-reach in frosty weather, let the wound be immediately washed with warm vinegar, and then filled with pepper, laying over it a restraining charge of whites of eggs, chimney foot, and vinegar; or else, of lime tempered with water. For an over-reach by long calkers, fill the hole with gun-powder, beaten and mixt with spittle; then set fire to it, and repeat the same the next day, taking care to keep the foot and wound from moisture: and washing the fore, from time to time, with brandy: otherwise fill the hole with cotton dipt in *emplastrum divinum* melted with oil of roses in a spoon, laying a plaster of the same over all, and dressing after this manner every day."

From this absurd mode of treating so simple an accident the more enlightened veterinary practitioner will recoil. See the article CUR.

**ATTENUANTS**, *Attenuantia* (from *attenuo*, to make thin). **ATTENUATING MEDICINES** act either, it is supposed, by diminishing the consistence of, or dividing coherent masses; or, by diminishing the size of the larger particles, hence exert their power both on the solids and fluids. Such as operate on the fluids by immediate contact are few, and those are water, or such as abound with water, as on this they depend for their action entirely. Viscid humours, alkaline, and other salts, are dissolved by water. Most of, or all the other *attenuants*, act on the solids by quickening their motion, increasing their tone, and so enabling them to attenuate the too thick fluids; hence they properly come under some other classes. CULLEN'S *Mat. Med.*

**ATTICKI**, the name of a breed of Arabian horses. See ARABIAN HORSE.

**ATTOLLENS** (from *attollo*, to lift up). It is an epithet applied to some muscles, whose office is to elevate the part to which they are attached.

**AUBIN**, in horsemanship, a broken kind of gait or pace, between an amble and a gallop, reputed a defect in a horse.

**AUDITORIA ARTERIA** (from *audio*, to hear). The internal auditory artery goes off from each side of the *arteria basilaris* to the organ of hearing, and accompanies the auditory nerve, having first furnished several small twigs to the *membrana arachnoides*.

**AUDITORIUS MEATUS** (from the same); the passage that conveys the air to the auditory nerve. It leads from the lower anterior part of the concha to the tympanum, and is partly bony, partly cartilaginous; all within the temporal bone is the bony part, it is the longest, and

forms the bottom; the rest is cartilaginous, and makes the external opening, or orifice of the canal; these two parts make a canal of about three-fourths of an inch long, a little tortuous, and wider in some parts than in others. On the membranous covering of the cartilaginous part, we observe the yellow bodies, supposed to be the *glandula ceruminis*. The bony part of the *meatus* is nearly horizontal, and straight; the cartilaginous part is curved and winding, which should be observed when a syringe is used to inject any thing with into the ear.

**AUDITORY NERVES**. The seventh pair of nerves are called *auditory*; so are the *sympathetici minores*. This seventh pair of nerves runs into the os petrosum, and is there divided into the *portio mollis*, which is spent upon the labyrinth of the ear, and distributed to the *meatus auditorius internus*, and so passes to the vestibulum cochlea, and *portio dura*, which goes out by the aquæduct between the mastoid and stiloïd processes, passes through the parotid, becomes a cutaneous nerve, and communicates with the upper maxillary. On these nerves, no covering from the dura mater can be traced.

**AURA** (from *αω*, to breathe, or *αερ*, air, or rather from the Hebrew term *AOR*), denotes an airy exhalation, or vapour, applicable to such also as rise from mephitic caves. The *chemists* meant by it a certain fine and pure spirit, found in every animal and vegetable body; but so subtle as to be perceptible by its smell and taste, or other effects not known in that body.

**AURICLES**, two appendages of the heart. These are two muscular caps, covering the two ventricles; thus called from the resemblance they bear to the external ear (*auris*). They move regularly, like the heart, only in an inverted order; their *systole* corresponding to the *diastole* of the heart, and *vice versa*. See further of their structure and office under the article HEART.

**AURICULATUM**, or **AURITUM, FOLIUM**; an EARED LEAF, from *auricula*, a little ear—twisted into the form of a little ear, or having an appendage like a little ear; or they are heart-shaped, but have the corners prominent and rounded, but with an additional smaller lobe near the base.

**AURIPIGMENTUM** (from *aurum*, gold, and *pigmentum*, paint); also called *arsenicum croceum*, *arsenicum flavum*, *adarnech*; *albimec althana*; *althanacha*; *othel*; **ORPIN**, **ORPIMENT**, and **AURIPIGMENT**. Galen called it *arsenicum*, and Serapion calls it *naruekh*.

There are three kinds of *orpiment*, the gold-coloured, the deep red mixed with yellow, called



*audarac*, *auripigmentum rubrum*, and the greenish and yellowish, which is the least valuable. The best is a yellow shining sulphureous mineral, consisting of little flakes or scales like talc. If powdered *orpiment* is set on fire, it will flame, and yield the odour of common brimstone; if a plate of copper is held over these fumes at their first rising, it becomes white and brittle; an iron plate is also turned white by them: it is soluble in oil. Mercury joined to an acid salt is a part in this mineral; but, as is the case with crude antimony, its sulphureous combination is such as to render it inert. It is kept long in a subliming vessel over the fire; the whole mass is raised, and concretes in the upper part of the vessel into a red pellucid substance like a ruby, leaving only a very small portion of metallic earth at the bottom.

Some farriers have used it for ill-conditioned ulcers. Mixed with quick-lime it hath been used as a caustic. If administered internally, its effects are similar to those of the *hydrargyrus muriatus*, or corrosive sublimate.

AUSTERE, implies a rough astringent taste; such as that of vitriolated metals, alum, &c. The word comes from *αυστηρός*, which signifies the same. *Austere* things differ from *acerb*, or four ones, in that they constrict the mouth and tongue somewhat less, and are devoid of acidity.

AVENIUS (from *α* priv. and *vena*, a vein). In botany it is applied to leaves which have no visible veins.

AVERRHOA, the name of a genus of plants, of the *decandria pentagynia* class, the characters of which are these: the perianthium is small, erect, and composed of five leaves. The flower is composed of five lanceolated petals, which stand erect on the lower part, and are expanded at the top. The stamina are ten setaceous filaments, half of which are of the length of the flower, and the other half shorter; these stand alternately together, and are terminated by roundish apices, or *antheræ*. The germen of the pistil is oblong, and faintly pentangular; the styles are five in number, and are setaceous and erect; and the stigmata are simple. The fruit is a turbinate pomum, obtusely pentangular, having five cells, and in each of them several seeds of an angular form, separated by membranes.

AVERTI, a word used in the manege, and applied to a regular step or motion enjoined in the lessons. In this sense, they say, *pas averti*, sometimes *pas ecouté*, and *pas d'ecolé*; which all denote the same. The word is mere French, and signifies advised, apprised, &c.

AVIARY (from *Avis*, a bird), a house or apartment set apart for the purpose of keeping, feeding, and propagating birds.

AVICENNIA, in botany, a genus of the *dynamia angiospermia* class, the calyx of which is divided into five segments, the corolla is bilabiate, the capsule is coriaceous and rhomboidal, containing a single seed.

AWMS, the beard of wheat or barley. The word is, in some parts of England, pronounced *aims*, or *ails*.

AXILLA, the ARM-PIT, in men and animals.

AXILLARY (from *axilla*, belonging to the arm-pit), in botany, means the growing out of the angles formed by the branches and the stem.

AXILLARY ARTERY. The SUBCLAVIAN ARTERY, in the human subject, having left the thorax immediately above the first rib, in the interstice between the portions of the scalenus muscle, there receives the name of *axillary*, because it passes under the axilla. This *axillary artery* detaches the external mammary arteries to the breast; the *axillary* lies behind, on the inside of the coraco-brachialis; when it has got to the under side of the subscapularis, it gives off a branch to that muscle, the *feratus major anticus*, &c. The *axillary artery* gives off the inferior scapular, which passes backwards, chiefly to the *infra spinatus*. Just below the head of the humerus the *axillary* throws off the humeral or articular artery, which, passing round the joint, anastomoses with its fellow. The *axillary artery* commonly runs down behind the tendon of the *pectoralis major*, then passes over the coraco-brachialis, goes down on the inside more and more forward, just covered by the inner edge of the biceps, passes under the aponeurosis of that muscle, and a little below the bend of the arm, between the pronator teres and supinator radii longus, divides into the radial and ulnar arteries.

For an account of the *axillary vessels*, see the anatomical descriptions of the *shoulder*, &c. under the article MUSCLES.

AXILLARY VEIN, a continuation of the subclavian vein, from its passage out of the thorax to the opposite side of the axilla.

AXILLARY NERVE, also called the ARTICULAR NERVE, arises, in the human subject, from the last two cervical pair; it runs in the hollow of the axilla, behind the head of the os humeri, between the musculus teres major and minor, and turns from within outwards and backwards round the neck of the bone, and runs to the deltoid muscles.

AXIS, in anatomy, the second vertebra of the neck, reckoning from the skull. It is thus

called because the first *vertebra*, with the head, move on it as an *axis*.

**AXIS**, in *zoology*, the name of a very remarkable animal, of the deer kind in all respects, except that neither the male nor female have horns; the tail is considerably long, and the whole shape and make extremely like those of the fallow deer. The female is smaller than the male, and both are of a reddish tawney colour, variegated with spots of white; the belly is white. The voice is much more loud and shrill than that of the deer. It is very plain that this creature is neither of the red nor fallow deer kind, whence Bellonius, who saw it at Cairo in Egypt, was induced to call it the *AXIS*.

**AXUNGIA**, a kind of fat, the hardest and driest of any in the bodies of animals. The word is supposed to be formed *ab axe rotarum quæ unguntur*, from its being used as the grease of wheels. The Latins distinguish fat into *pinguedo*, and *adeps*, or *sebum*; which last, when old, is particularly called *axungia*: but many of our modern writers confound them. In pharmacy we make use of the *axungia* of the goose, the viper, and some others, especially that of the hog, which is as good as any.

**AZOOEPHAGUS** (from  $\alpha$ , ζῷον, *animal*, and Φαγω, *I eat*), in natural history, a term used by authors to express such insects or animals as feed on herbs, never eating the flesh of any living creature.

**AZOTE**, or **AZOTIC GAS** (from  $\alpha$  neg. and ζῷον, *vita*), the noxious part of the atmospheric air, called *mephitic*, see **AIR**. It has been called **AZOTIC** by modern chemists, because the chemical properties of the noxious portion of atmospheric air being hitherto little known, they have thought it right to derive the name of its base from the known quality of killing such animals as breathe in it.

That air which served the purposes of combustion and respiration is no longer proper for those uses, is a fact that has been long ascertained; and the air thus corrupted has been distinguished by the names of *Phlogificated Air*, *Mephitised Air*, *Atmospherical Mephitic*, &c. But in the new nomenclature of chemistry it is denominated *Azotic Gas*; and Mr. Chaptal has given it the name of *Nitrogene Gas*, which is probably still more proper.

This gas, which is the residue of combustion or respiration, is always mixed with a small quantity of vital air and carbonic acid, which must be removed in order to have the azotic or nitrogene gas in a state of purity. There are several methods which may be used to obtain this

gas, in a very pure state. It has been proposed by Mr. Scheele to obtain this air by exposing sulphure of alkali, or liver of sulphur, in a vessel filled with atmospheric air, as the vital air on being completely absorbed leaves the nitrogene gas pure. By exposing, in atmospheric air over mercury, a mixture of iron and sulphur, kneaded together with water, Mr. Kirwan obtained azotic or nitrogene gas so pure, that it suffered no diminution by nitrous gas. He deprived it of all humidity, by successively introducing dried blotting-paper into the vessel which contained it. Care must be taken to withdraw this air in time from the paste which affords it; otherwise it will be mixed with hydrogenic or inflammable gas, which is afterwards disengaged. When by any means, such as the oxidation of metals, the rancidity of oils, the combustion of phosphorus, &c. the vital air of the atmosphere is absorbed, the residue is azotic or nitrogene gas. All these processes afford methods of greater or less accuracy for the determination of the proportions of vital air and azotic or nitrogene gas in the composition of the atmosphere.

It has also been found that this mephitic can be procured by treating muscular flesh, or the well-washed fibrous part of blood, with nitric acid in a proper machine or apparatus. But it must be carefully observed that these animal matters ought to be fresh; for, if they have begun to be changed by the putrid fermentation, they afford carbonic acid mixed with hydrogenic gas. This gas has been found to be improper for respiration and combustion; but plants can live and vegetate freely in it; and it mixes with the other airs, without combining with them; but is lighter than the atmospheric air. The barometer standing at 30.46, and Fahrenheit's thermometer at 60: the weight of nitrogene gas has been determined to be to that of common air as nine hundred and eighty-five to one thousand. When mixed with vital air, in the proportion of 72 to 28, it constitutes our atmosphere. The other principles which analysis has demonstrated in the atmosphere, are only accidental, and by no means essential to it. But in order to give a more perfect idea of the nature of azotic or nitrogene gas, it may be necessary to mention a few of its properties. From its being somewhat lighter than common air, it occupies the upper part of rooms in which the air has been altered by combustion or respiration. But though so noxious to animals in the state of elastic fluidity, the azotic principle, its base, is one of the component principles of animal bodies; from which it may be extracted in great abundance. It is



likewise one of the constituent parts of ammoniac or volatile alkali, and of the nitric acid. It appears to be absorbed by vegetables, and perhaps also by animals. It is highly probable too that the same principle enters into the composition of all alkaline bodies, and may be considered as a genuine *alkaligenous* principle, in opposition to the base of vital air, to which the name of the *oxigenous* principle has been given.

Under the article AIR we have spoken generally of the ill effects of a vitiated *atmosphere*, but we here propose to consider it in a chemical point of view.

A very slight knowledge of chemistry will inform us that gaseous substances seldom exist alone and insulated; but that nature presents them every-where to our observation in a state of mixture or of combination. In the first case these gases preserve the æriform state; in the second they for the most part form fixed and solid bodies. Nature, in her several decompositions, reduces almost all the principles of bodies into gas; and these new substances unite together, combine, and from thence result compounds of considerable simplicity in their principles, but which become complicated by subsequent mixtures and combinations. It has been shewn that the mixture of about seventy-two parts of azotic or nitrogenous gas, and twenty-eight of oxygen, forms the fluid mass in which animals live. These two principles are so well mixed, and each of them is so necessary to the support of the various functions of individuals which live or vegetate upon the globe, that they have not yet been found separate and distinct from one another. But the proportion of these two gases is subject to variation in the mixture which forms the atmosphere: this difference however depends only upon local causes; and the most general proportion is that which has been mentioned above. The properties which form the characteristic of vital air are modified by those of azotic or nitrogenous gas, and these modifications would seem to be essentially necessary; for if vital air in its state of purity were to be constantly respired, it would quickly consume and destroy life; this pure air is therefore no more suitable to our existence than distilled water. Nature seems not to have designed all

animals for the use of these principles in their greatest degree of perfection. It is well known that the atmospherical air is elevated several leagues above our heads, and that it fills the deepest subterranean cavities. It is invisible, insipid, inodorous, ponderous, elastic, &c. This was the only gaseous substance known before the present æra of chemical science; for the infinite gradations of all the invisible fluids which presented themselves to the observation of philosophers were constantly attributed to different modifications of this air.

*AZYGOS*, vel *AZIGOS*, *VENA* (from  $\alpha$ , neg. and  $\zeta\upsilon\gamma\omicron\varsigma$ , a pair, without a fellow), *Vena sine pari, et jugo*. A vein situated within the thorax on the right side, having no fellow on the left, whence its name. It arises posteriorly from the vena cava superior, a little above the pericardium: it is immediately bent backwards over the origin of the right lobe of the lungs, forming an arch which surrounds the great pulmonary vessels on that side, as the arch of the aorta does those on the left, with this difference, that the curve of the *azygos* is directly backwards, but the other is oblique; from thence it runs down by the right side of the vertebræ dorsæ, and before the intercostal arteries; and getting behind or below the diaphragm, it terminates by an anastomosis, sometimes with the vena renalis, at others with the neighbouring lumbar vein, sometimes immediately with the trunk of the vena cava inferior.

The vena *azygos* sends out branches from its upper part to the *aspera arteria* and bronchia, by the name of *venæ bronchiales*; afterwards it sends out the *intercostales dextræ superiores* lower down the *intercostales dextræ inferiores*.

Sometimes there is an *azygos*, on the left side, proceeding from the arch of the common *azygos*; it is afterwards distributed in the same manner as the other on the right side; but this disposition is very variable.

The *azygos* having reached the last rib, sends off a large branch, which, bending outwards, perforates the muscles of the belly, is ramified betwixt different planes, and communicates with the branches of the intercostal veins, which run there.

# B.

## B A C

**B**ACCA, by some etymologists derived from *Bacchus*, the inventor of wine, which is produced from the berry of the vine; others think it seems to be from an Hebrew term (*baccab*), a BERRY. In botany, it is a roundish fruit, mostly soft, with one or more seeds, in a pulpy substance covered with a thin skin; but if harder, and covered with a thicker skin, it is called *pomum*, or *apple*.

**BACCÆ**, are small roundish fruit that grow scattering upon trees and shrubs, and in that are distinguished from acini, which are berries hanging in clusters.

**BACK**, in the manege and among farriers. A horse's back should be straight, not hollow, which is called *saddle-backed*: horses of this kind are generally light, and carry their heads high, but are wanting in strength and service. A horse with a weak back is apt to stumble. See **FIGURE**.

In the French schools, to mount a horse *a dos*, is to mount him bare-backed without a saddle.

**BACK-GALLED**, a disorder very incident to horses upon the road in travelling; and more especially to young horses, whose backs are unused to carry loads. With these last, a pretty large-seated saddle agrees best; and every morning alter the crupper a hole or two, that it may draw the saddle back; and now and then let it also have liberty forwards. By this means he will not carry his weight always in the same place; which will conduce greatly to his ease, and keep the skin upon his back. Let the horse's back be cooled every time he is baited; and it should be now and then washed with warm water, and wiped dry with a linen cloth; and the saddle should also be scraped, so that no hardness or inequalities remain from the sweat, that, together with the dust, sticks round the seat of the pannel.

The shape indeed of the horse's back should be viewed, seeing every horse differs in this particular. The saddle should not only be pretty large in the seat for a young horse, but the pan-

## B A C

nel and stuffing should answer the shape of the back, in such sort, that it may bear as equally as possible upon all the parts at the same time; and indeed if we would do things properly, we should have the pannel of the saddle so contrived, as that we might shift the stuffing every morning, or according as we see there is an inflammation coming on, which may be perceived by some places under the saddle sweating, or keeping moist longer than others, especially if we view the back some hours after the saddle has been taken off. These places should be eased by removing the stuffing, and thereby causing the weight of the rider to press upon the other parts that are not heated so much.

When inflammation has advanced so far as to cause obstruction, the disease tends to an abscess; but because the hide of the horse is thick, and the pressure of the saddle is often applied, the tumor cannot always be formed large, but instead of it there oozes out a kind of thin lymph about the edges. This people generally call the *SIT-FAST*, which is nothing but a part of the horse's skin that is indurated.

If you take away the pressure before the inflammation is too far advanced, there will not be so great an obstruction as to occasion a *sit-fast*, or *WARBLE*. Salt and water, warm urine, vinegar, &c. are commonly used to cool a horse's back that is hurt: but if the skin be broken into holes from what are called warbles, it will be found that equal quantities of spirits of wine and tincture of myrrh and aloes, with a little oil of turpentine, will be best to bathe the place with now and then.

**BACK-RAKING**, an operation so called by the farriers, which consists in anointing the hand very well with any sort of oil or butter, and introducing it into a horse's fundament by little and little, to fetch out his excrements, when he has got a windy cholic, and there is reason to suspect that the flatulency is obstructed by hardened dung. In this operation the farrier should put his arm into the fundament as far as he well can. But it should be done by a person who has



a hand and arm of the smaller size; for some are so large and brawny, that unless the horse be of a larger sort, there would be some danger of an inflammation in the gut, which would be of far greater consequence than the disease. See CHOLIC.

BACK-SINEWS, those tendons which are placed behind the fore legs in a horse, and very commonly injured by over-exertion. The parts so named by vulgar farriers are no other than the *extensor tendons* of the foot. Mr. St. BEL, in his Lectures on the Art of Farriery, enquires into the cause of those swellings which we so frequently observe along the tendons or sinews of the leg, after violent galloping, or after any extraordinary effort, commonly called STRAINS. He does not speak of those swellings which are the result of long-continued exercise, or long rest, or which depend upon internal causes; but of those only which are occasioned by some violent effort, as is the case when a horse treads on an irregular surface, or when he leaps too suddenly, without being duly prepared; or executes the leap badly. "In either case," says Mr. St. BEL, "the ligaments which determine the extent of the flexion and extension of the parts, are distended and strained, in proportion to the power acting on them at the instant of the exertion, in consequence of their want of elasticity. It is also on this account, that the pain occasioned thereby is great, and of long duration. It is this sharp pain, which, irritating the neighbouring parts, inflames them, and causes the blood and humours to lodge there; but the ligaments themselves, being composed of an extremely hard texture, which receives scarcely any kind of vessels, are not liable to swelling. The increase of bulk of the leg, therefore, is nothing more than a *symptom of the complaint*, and not the complaint itself, as has been too commonly supposed. The seat of the affection is still less in the tendons, since the *rupture of the muscular fibres* must take place before the tendons can be at all affected, in case of a strain."

If we were to dissect the leg of a horse, labouring under a *strain in the back-sinews*, according to the vulgar notion, we should discover no affection in the substance of the tendinous parts, which, on the contrary, would appear in their natural state; but if the surrounding parts were examined, we should observe, according to the duration of the disease, a relaxation in the sheaths of the tendons, or in the capsular ligament of the articulation.

If the ailment is of long standing, and nature has exhausted all her resources in endeavouring to discuss the stagnated humours without being able

to succeed completely, a small hard swelling will appear in the sheaths of the tendons, sometimes two, and even three, which are called GANGLIONS; whose situation near the tendons is sufficient to make the horse walk lame for the remainder of his life.

If a horse, before perfectly free in his limbs, is suddenly attacked with lameness, attended with swelling on the part just mentioned, and if this happen after hard running, a leap, a fall, or a slip, without any blow, contusion, or wound in the tendon, we may then suspect the existence of a strain in the ligaments, and in the sheaths of the tendons. But, as in this case the fleshy fibres must participate in the effect of this extension, we should not neglect to feel the extensor muscle of the foot, which is situated at the hinder part of the arm; in order to discover whether the animal experiences any pain in that part. When the disease is ascertained, there remains only to prescribe proper remedies for the affected parts.

If there be inflammation and swelling, we should employ emollient substances, as the properest to begin the cure with.

Take Mallows,

Marsh-mallows,

Pellitory of the wall, of each one handful.

Boil them for three quarters of an hour, in common water, and chop them fine for a poultice, which is to be applied to the leg, from the knee down to the foot, and which is to be moistened every three hours with some of the emollient decoction.

The following ingredients will answer the same purpose:

Take crumb of bread,

Linseed meal,

And a sufficient quantity of the emollient decoction, made of mallows, &c. to form a poultice.

Or, for want of these ingredients, use warm water, by way of bath, or fomentation; it is the most powerful relaxant in veterinary medicine.

If, notwithstanding the treatment here recommended, the swelling should not be entirely dissipated in about a month, or more, and if there should remain *ganglions* seated in the sheaths of the tendons, Mr. St. BEL recommends the operation of FIRING, which, he says, often produces good effects when applied before the humour becomes concreted, and the tumor insensible and hard. In the latter circumstance, the effect of firing goes no further than to extract what little fluid may remain in the affected part, by the inflammation and suppuration it creates; it increases the hardness, and for ever prevents its discussion. Experience having shewn, that remaining a long time in the stable is hurtful to

the diseased part after the operation of firing, it will be requisite to exercise the horse daily, in order to promote the cure.

For an account of other injuries to which these parts are liable, see STRAIN.

Mr. LAWRENCE, of Birmingham, describes this disease under the name of a Strain of the Sheath of the Tendons, which, he says, generally shews itself on the back part of the leg above the fetlock.

"It may be brought on," he observes, "by sudden and violent exertion, or by a blow from the toe of the hind foot; which accident often occurs in hunting over heavy land, in which case the fore leg is prevented from extricating itself in time to avoid the toe of the hind leg."

"The injury very rarely exists in the tendon itself, but is more commonly confined to the sheath which surrounds it. Camphorated spirits of wine well rubbed on the parts affected, and a moderately tight bandage dipped in cold water, will effect a cure, if applied immediately."

"But if the complaint has been of long duration, so as to have become callous, repeated blisters will be necessary."

BACKING A COLT, the operation of breaking him to the saddle, or bringing him to endure a rider. To back a colt, they usually bring him into ploughed ground; trot him a while to rid him of his wantonness; then, having one to stay his head and govern the chaffing rein, you take his back, not suddenly, but by degrees; first making several heavings, and half risings. When he bears these patiently, you may mount in earnest, and settle in your place, taking care to cherish him, &c. See the article COLT.

BAG, a peculiar form of medicine for a horse, much practised by farriers of the old school. It was usually employed to excite an appetite, and the manner of preparing it was this: They took an ounce of assa-fœtida, and an equal quantity of the powder of favin. These ingredients they put into a bag, which they fastened to the horse's bit (keeping him bridled for two hours), two or three times a-day. This remedy had also the name of the *chewing-ball*.

BAHIRA, among the *ancient Arabs*, a name given to one of the four kinds of camels or sheep, which for some reasons of their religion were turned out at liberty with an ear-mark, no longer to be used for service like other cattle. The *bahira*, with the *sabai*, *wasita*, and *hami*, were abolished by Mahomet, as no ordinance of God. Authors are not agreed as to the characters of the *bahira*.

BAITING, the cruel act of setting smaller or weaker beasts to attack or harass greater and stronger ones.

In this sense we hear of the baiting of bulls and bears by mastiff or bull dogs, with short noses, that they may take the better hold. Whales are baited by a kind of fish called *orie*, or *killers*; ten or twelve of which will attack a young whale at once, and not leave him till he is killed. Philosoph. Transact. No. 287. p. 265.

Houghton gives us the history of BULL BAITING, a sport peculiar to England, and favouring, like some others, of our ancient Gothicism. Some of our countrymen, formerly, are said to have been fond enough of it, to buy bulls on purpose, and travel with them, at great charge, to all the chief towns around. The *baiting* of this animal makes his flesh tender and more digestible. In reality, it disposes it for putrefaction, so that, unless taken in time, *baited* flesh is soon tainted. Mr. John Lawrence makes the following remarks on this barbarous sport. He says,

"The baiting of animals, as it is called, that is, chaining and staking down wretched captives, to be worried and torn to pieces by other animals, purposely trained for such useless barbarity, is absolutely unlawful, contrary to the light of reason, and the dictates of humanity; the foul disgrace of common sense, and never ought to be tolerated for a moment, in a government which claims to be instituted for the protection of rights, and the advancement of morality."

"The origin of the infamous practice of baiting BULLS, which had afterwards the sanction of an ignorant and barbarous legislature, is said to have been as follows. By custom of the manor of Tutbury, in Staffordshire, a bull was given by the prior to the minstrels. After undergoing the torture of having his horns cut, his ears and tail cropped to the very stumps, and his nostrils filled with pepper, his body was besmeared with soap, and he was turned out, in that pitiable state, in order to be hunted. This was called bull-running; and if the bull was taken, or held long enough to pull off some of his hair, he was then tied to the stake, and baited. In this unfeeling manner, was the most innocuous and useful of the animal creation treated by savage man;—by priests and legislators, in too many periods, notwithstanding their high pretensions, equally unenlightened in essentials, with the lowest of mankind!"

BALAUSTIA, or BALAUSTIUM (from βαλυστος, *various*, and αλω, *to dry*; so called from the variety of its colours, and becoming soon dry; or from [λασ]αλω, *to germinate*). Called also *malus punica sylvestris*; *granatus sylvestris*, the double-flowered wild POMEGRANATE, or the BALAUSTINE TREE. The PUNICA GRANATUM,



PLENA MAJOR. *Foliis lanceolatis, caule arboreo.*  
 Class, ICOSANDRIA. Ord. MONOGYNIA. LINN.  
 Gen. Plant. 618.

*Balaustium* is properly the cup of the flower of this tree. The *balaustines*, which are in the shops, are large rose-like flowers of a deep red colour, set in long, bell-shaped, tough cups; they are produced on the *balaustia* flore pleno majore, C. B. which is a low prickly tree or shrub, with long narrow leaves, with a brownish acerb fruit, about the size of an orange. It is a native of the southern parts of Europe, and is cultivated in our gardens for the beauty and duration of its flowers. The dry flowers are brought from abroad into England, but those of our own growth do not seem to be inferior to the foreign.

Those flowers are mildly astringent, but less powerful than the bark of the fruit, and have a rough bitterish taste. They give out their virtues to water, and to rectified spirit of wine; the extracts made from these tinctures retain all their astringency, but the watery infusion yields most, and the spirituous a somewhat stronger extract.

Mr. St. BEL and Mr. JOHN LAWRENCE introduce this remedy into some of their prescriptions.

BALOTADES are the leaps of a horse between two pillars, or upon a straight line, made with justness of time, with the aids of the hand, and the calves of the legs; and that in such a manner, that when his fore feet are in the air, he shews nothing but the shoes of his hinder feet, without striking out. Thus it is, that the air or manege of balotades differs from caprioles, for a horse that works at caprioles yerks or strikes out his hinder legs with all his force, keeping them near and even. Balotades differ likewise from croupades in this, that in the former, the horse shews his shoes, when he lifts or raises his croup; but in croupades, he draws his hinder feet under him.

BALL, a well-known convenient form of medicine, for horses and other animals, since it may be passed at once into the throat. Mr. Clark, of Edinburgh, makes the following remarks on the exhibition of medicines in this form.

Balls for horses are similar to the pills that are administered to the human body, and are intended to convey those substances in that solid form into the stomach, which cannot (or at least is not proper), to be done otherwise.

In the general practice of farriery, they are improperly distinguished by the appellation of *cures for such and such diseases*, and too frequently given with little caution; and from thence arise considerable errors in practice.

Balls should be made of an oval shape, and about the size of a small egg, but longer, and conveyed over the root of the tongue by the hand. To perform this operation with ease to the horse, the operator's fingers should be extended and surrounding one end of the ball, the whole hand and thumb being contracted inwards, in order to occupy as little space as possible. The ball is then to be pushed over the root of the tongue; the smaller the hand is, the ball will be given with more ease both to the horse and to the operator. In order to prevent the fingers, &c. from being hurt by the teeth, an iron instrument covered with cloth (which is known to most grooms under the denomination of a *balling iron*) is put into the fore part of the horse's mouth, which keeps it at a proper wideness, having an opening of an oval form, sufficient to admit the operator's hand and arm. At the same time, the tongue should be drawn a little out, and held to one side by the other hand, and kept close to the under jaw, which position contributes greatly to facilitate the operation. The instant the ball is delivered, the tongue must have its freedom, as it is necessary in the action of deglutition. The operator should be careful not to pull the tongue too far out of the mouth, without pressing it down upon the lower jaw, and keeping it in that position by grasping the jaw at the same time; for, if he holds the tongue singly, by itself, as horses are apt to struggle much in these cases, he may hurt the tongue considerably; instances of which have occurred by such practices: or the muscles of it may be so much strained, as to prevent the horse from swallowing any thing but with the greatest difficulty for some considerable time afterwards.

The administering of medicines in the form of balls is preferable in most cases to that of drenches, as the operation of giving them, when rightly performed, gives the horse no fatigue; the dose prescribed is conveyed with certainty into the stomach, without any diminution or loss of its quantity.

Farriers have one great advantage in administering medicines to horses, viz. That, after they are properly compounded and adapted to the disease, if once they can convey them into the stomach, they cannot be thrown up again, the stomach not possessing the power of vomiting. From the same cause, on the other hand, the effects of hurtful or injudicious prescriptions must be pernicious in their consequences.

In compounding balls, after the ingredients are properly prepared, they must be made into a stiff paste, by the addition, if necessary, of balsams, syrups, mucilages, molasses, or honey, the

mass then divided into one or two balls of a proper size, according to the dose prescribed. It is likewise necessary, when they are to be kept for any length of time, to have them tied up in a bladder, and rolled in some dry powder, as flour, liquorice powder, &c. in order to prevent them from sticking together.

It is common to make up large quantities of balls for horses in too great a mass at once: this requires attention; for, if great care is not taken that the different ingredients are thoroughly incorporated with the general mass, they will be unequally divided, too great a proportion of one ingredient being in one ball, and too little in another; therefore, when any prescription that requires nicety in the dose is recommended, every ball should be made up separately, with the exact quantity prescribed in each, as in purging balls, &c.

Several FORMULÆ FOR BALLS have already been given in the preceding sheets; but we shall here present the reader with such as appear in the publications of the latest veterinary writers; affixing their names to the several compositions, and numbering them for the convenience of future reference.

ALTERATIVE BALLS.

By Mr. John Lawrence.

(No. 1.) Take Flowers of sulphur,  
Cream of tartar, each half an ounce;  
Canella alba, in powder, one drachm;  
Treacle enough to make a ball.  
Half of this, or the whole, to be given twice a day on an empty stomach.

(No. 2.) Take Flowers of sulphur,  
Cream of tartar,  
Gum guaiacum,  
Turmeric, of each two drachms;  
Canella alba, one drachm.  
Make them into one or two balls with treacle, and give as above.

(No. 3.) Take prepared antimony,  
Gum guaiacum, of each from three to four drachms.  
Make these into a ball with treacle, and give every day.

(No. 4.) Take Antimonial æthiops, four to six drachms;  
Treacle enough to make a ball.  
This is to be given every night for a fortnight; then omit it for a week, and resume its use

again for another fortnight. It has great effect in the farcy, the mange, and oblitinate dry coughs in horses.

"The intent of *alterants*," says Mr. Lawrence, "is gradually to remove chronic obstructions of long standing, which would not so readily give way to the brisk and transient effects of a purge; by thinning, purifying, and accelerating the motion of animal fluids. The chief considerations in the exhibition of this class of medicines, are, that the more powerful species be not resorted to, unless the humours of the animal be in a corrupted or depraved state, that the doses be very moderate and continued a considerable time, and that the powders be reduced as fine as possible; to a pinch of snuff. Large doses purge, and the medicine passes too quickly; their frequency debilitates the stomach, and depresses the spirits; if the powder be gross, instead of entering the lacteals and passing thence into the blood, it is carried through the intestines unchanged."

By Mr. Richard Lawrence.

(No. 5.) Take Tartarised antimony, one drachm;  
Liquorice powder, one ounce;  
Venice turpentine, half an ounce.  
Mix these together into a ball, and give every other night for four or five nights. Mr. Lawrence recommends this for horses affected with the GREASE.

By Mr. White.

(No. 6.) Take levigated antimony, six ounces;  
Flowers of sulphur, eight ounces;  
Mix with treacle, and divide into eight balls.

(No. 7.) Take powdered rosin, four ounces;  
Nitre, three ounces;  
Tartarised antimony, one ounce;  
Treacle, a sufficient quantity.  
Make a mass, and divide into eight balls.

(No. 8.) Take unwashed calx of antimony, two ounces;  
Calomel, two drachms;  
Powdered aniseeds, four ounces.  
Make them, with treacle, into eight doses.

(No. 9.) Take calomel, half a drachm;  
Aloes, one drachm;  
Castile soap, two drachms;  
Oil of juniper, thirty drops;  
Powdered aniseeds, half an ounce;  
To be made into a ball with syrup, for one dose.  
Mr. White calls this the *mercurial* alterative.



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By Mr. Taplin.

- (No. 10.) Take levigated antimony,  
Flowers of sulphur,  
Nitre, of each three ounces;  
Castile soap, ten ounces;  
Oil of juniper, three drachms;  
Honey, enough to make a mass.

Divide into twelve balls, and give one every morning for three or more weeks, in cases of the *Grease*, after purging with a common ball.

- (No. 11.) Take milk of sulphur,  
Prepared antimony,  
Cream of tartar,  
Cinnabar of antimony, of each five ounces;  
Æthiop's mineral, four ounces;  
Honey, sufficient to make a mass.

Divide this into a dozen balls, which are directed to be given one every morning in the *farcy*, and continued for a month.

### PURGING BALLS.

By the same.

- (No. 1.) Take succotrine aloes, one ounce;  
Rhubarb, two drachms;  
Jalap,  
Cream of tartar, of each one drachm;  
Ginger, two scruples;  
Oil of cloves,  
Oil of aniseed, of each twenty drops;  
Syrup of buckthorn, enough to form a ball.

By Mr. White.

- (No. 2.) Take succotrine aloes, five drachms;  
Prepared natron, two drachms;  
Aromatic powder, one drachm;  
Oil of carraways, ten drops.

With syrup form these into a ball.

- (No. 3.) Take succotrine aloes, seven drachms;  
Castile soap, half an ounce;  
Ginger, one drachm;  
Oil of carraways, ten drops.

Form these into a ball with syrup.

- (No. 4.) Take succotrine aloes, one ounce;  
Prepared natron, two drachms;  
Aromatic powder, one drachm;  
Oil of aniseed, ten drops;  
Syrup enough to form a ball.

Mr. White assures us, that the second of these compositions (No. 3), generally answers even for

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strong horses, and that he has scarcely ever occasion for a purge of greater activity than No. 4.

By Mr. Ryding.

- (No. 5.) Take Barbadoes aloes, six drachms;  
Ginger, one scruple;  
Soft soap, a sufficient quantity to form a ball.  
(No. 6.) Take Barbadoes aloes, half an ounce;  
Calomel, one drachm;  
Mucilage of gum-arabic, sufficient to form a ball.

The former of these Mr. Ryding calls a *mild purging ball*; and the latter the *mercurial purging ball*. He directs the aloes to be *finely* powdered.

By Mr. John Lawrence.

- (No. 7.) Take succotrine aloes, from twelve to fourteen drachms;  
Cream of tartar, from one to two ounces;  
Powdered ginger, a teaspoonful;  
Olive oil, a tablespoonful;  
Syrup of buckthorn, or treacle, a sufficient quantity.

Form these ingredients into *two or three* balls, according to the purpose intended. To render them *more active*, Mr. Lawrence reduces the quantity of aloes, and introduces a proportion of jalap; but the purgative effect of the latter, on the intestines of the horse, is denied at the Veterinary College.

By Mr. Richard Lawrence.

- (No. 8.) Take Barbadoes aloes, nine drachms;  
Ginger, one drachm;  
To be formed into a ball with treacle, or any kind of syrup.

### DIURETIC BALLS.

By the same.

- (No. 1.) Take Venice turpentine, half an ounce;  
Tartarised antimony, two drachms;  
Liquorice powder, one ounce.  
Form them into a ball with treacle.

By Mr. White.

- No. 2.) Take Castile soap, four ounces;  
Powdered rosin,  
Nitre, of each two ounces;  
Oil of juniper, half an ounce;  
Linsced powder, and syrup, enough to give the mass a proper degree of solidity.

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For strong horses, Mr. White says, this may be divided into six balls; for weak ones, into eight.

(No. 3.) Take Castile soap, four ounces;  
Venice turpentine, two ounces;  
Powdered aniseeds, a sufficient quantity.

With treacle make six balls of this.

*By Mr. Ryding.*

(No. 4.) Take yellow rosin,  
Castile soap,  
Venice turpentine, of each one pound.

Dissolve them slowly over the fire, and when sufficiently incorporated, form the mass into balls of from one ounce to an ounce and a half.

Mr. Ryding says, these are excellent diuretics, and may be given in gripes, swelled legs, grease, or in diseases of the eyes, &c.

### CORDIAL BALLS.

*By the same.*

(No. 1.) Take grains of paradise, in fine powder, two ounces;  
Ginger,  
Canella alba, of each half an ounce;  
Aniseeds,  
Caraway seeds, of each an ounce and a half;  
Liquorice powder, two ounces;  
Honey, a sufficient quantity to form eight balls; one to be given occasionally.

*By Mr. White.*

(No. 2.) Take cummin seeds,  
Anniseeds,  
Caraway seeds, of each four ounces;  
Ginger, two ounces.

Make a mass of these with treacle, and give in balls of about two ounces.

(No. 3.) Take anniseeds,  
Caraway seeds,  
Sweet fennel seeds,  
Liquorice powder, of each four ounces;  
Ginger,  
Cassia, of each an ounce and a half;

Form these into a mass with honey, and give about two ounces for a dose.

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These compositions may be varied ad infinitum; but the effects are the same whatever aromatic ingredients are used; for which reason further examples are unnecessary.

### ASTRINGENT BALLS.

*By Mr. Taplin.*

(No. 1.) Take diascordium, six drachms;  
Gum arabic,  
Prepared chalk,  
Armenian bole, of each half an ounce;  
Ginger, one drachm;  
Oil of aniseed, forty drops;  
Syrup, enough to make a ball;

To be given in cases of lax or scouring, and repeated in six, eight, or twelve hours, as the case may require.

(No. 2.) Take of rhubarb,  
Compound powder of gum-tragacanth, of each half an ounce;  
Colombo,  
Ginger, of each one drachm;  
Opium, fifteen grains;  
Conserve of orange peel, six drachms;  
Syrup of poppies, sufficient to form a ball: to be repeated in twelve, eighteen, or twenty-four hours.

(No. 3.) Take mithridate, one ounce;  
Armenian bole,  
Gum-arabic,  
Prepared chalk, of each half an ounce;  
Ginger, two drachms;  
Syrup of poppies, enough to make a ball.

More formulæ of this kind might be produced, but we apprehend they would be superfluous.

### RESTORATIVE BALL.

*By Mr. Ryding.*

(No. 1.) Take Peruvian bark, half a pound;  
Grains of paradise, two ounces;  
Gentian,  
Colombo, of each three ounces;  
Honey, enough to make a mass: which is to be divided into sixteen balls; one to be given every morning in cases of indigestion, or loss of appetite.



## B A L

By Mr. Taplin.

- (No. 2.) Take Peruvian bark, four ounces ;  
Mithridate (or diascordium), two  
ounces ;  
Canella alba, -  
Snake root,  
Camomile, of each, in powder,  
one ounce.

Make a mass with honey, and divide into six  
balls, one to be given night and morning.

- (No. 3.) Take Venice treacle, half an ounce ;  
Peruvian bark, six drachms ;  
Columbo,  
Camomile, of each two drachms ;  
Oil of carraways, twenty-five  
drops ;  
Honey, sufficient to make a ball.

### DIAPHORETIC BALL.

By Mr. White.

- (No. 1.) Take opium, one drachm ;  
Camphor, two drachms ;  
Tartarised antimony, three drachms ;  
Powdered aniseeds, half an ounce.  
Syrup, enough to make a ball.

On this composition it may be observed, that  
the union of *antimonials* with *tonics* would, in  
the treatment of human maladies, be deemed in-  
consistent practice.

It is unnecessary to add any other formulæ for  
*restorative balls* ; as, simply joining any of the  
aromatic powders with bark, will fully answer  
the purpose of giving tone to the stomach, and  
vigour to the whole system, of a weak animal.

Most of the *POWDERS* directed in veterinary  
practice may be made into balls, if thought best  
to be given in that form ; which is, for the most  
part, the case ; since mixing powders with the pro-  
vender is a very uncertain mode of exhibiting  
medicine to animals.

Mr. John Lawrence prefers giving *two small*  
*balls* rather than *one* of any great bulk, as acci-  
dents have happened from the latter. He usually  
twists these up together, in a piece of soft paper,  
and after dipping it in oil, passes it into the  
œsophagus.

**BALNEA** (from βαλανας, *an acorn*, because  
the ancients used to burn the husks of nuts or  
acorns in their baths ; or from βαλλω, *to cast*  
*away*, and αια, *grief*, because they expel griefs  
from the mind. **BATHS**.

**EMBROCATIONS, FOMENTATIONS, and BATHS**,  
differ from each other as follows : the **FIRST** are  
**FLUIDS**, designed to pass through the skin, when  
rubbed on it, to dislodge some obstruction, ease  
pain, or to irritate the part into more warmth,

## B A L

and a greater sense of feeling ; the **SECOND** differ  
only in the manner of application, which is with  
*actual heat*, by means of flannel cloths or sponges,  
and that they are made in an aqueous men-  
struum, as their application is more extensive :  
the **THIRD** differ from both these in being uni-  
versal, the whole body being immersed in a  
*bath*, and from the first in being generally of a  
watery kind.

**BATHS** are either of simple cold water, and  
then are called *cold baths* ; simple or medicated  
water made hot, or that is so by natural means ;  
these are called *warm* or *hot baths*, according to  
the degrees of heat given. To form an idea of  
their use as a means of cure in brute animals,  
we should first be well acquainted with their  
effects in human diseases. We shall therefore  
briefly consider the subject in that light.

The sea water is the heaviest, and is so in pro-  
portion to the degree of salt it contains ; but it  
is not so cold as the fresh water of springs.

**I. COLD BATHING** is the most needful to the  
human system, where a strong shock is required,  
and where the surface of the body requires brac-  
ing up to a more tense degree. It contracts the  
solids, condenses the fluids, and accelerates their  
circulation ; and this by its stimulus, when the  
water is fresh, and by its gravity as well as sti-  
mulus, when it is salt. As to pressure, the cold  
and the hot *bath* seem not to differ ; if the be-  
nefit is expected from this principle, the sea-  
water must be chosen.

In tender constitutions, and some diseases in  
which a morbid irritability is the offending cause,  
a moderate warm *bath* should be used before the  
cold one is attempted, and the approach to cold-  
ness should be gradual. When the fibres are  
rigid, and the viscera unsound, cold bathing is  
injurious ; and none should engage in it before  
a gentle glow is excited in them by moderate ex-  
ercise, and this when the stomach is most empty.

Previous to cold bathing, evacuations, such as  
the constitution of the patient requires, should  
be made. If cold bathing make the patient cold  
and numb after he comes out of the water, not-  
withstanding precautions against this effect, this  
kind of bathing must be omitted. While it  
continues to excite an universal glow after com-  
ing out, it is useful.

In climes that are changeable, and where there  
is much damp weather, cold bathing, by mak-  
ing the skin less susceptible of such changes,  
proves very salutary. In cold countries, bathing  
in cold water is generally the least disagreeable,  
and the most salutary. The Russians use cold  
bathing both frequently, and in a manner that  
is almost peculiar to themselves ; they first make  
themselves sweat, and then plunge into the cold

*bath*; but it should be observed, that the different effects of going into cold water when hot, are from the different modes of the heat being excited. The Russians heat themselves before cold bathing by exposing their bodies to an external heat, and sitting quietly in it; now in this case, though the pulse is quickened, yet the lungs are not affected, nor is respiration hurried: but if the heat had been excited by exercise, the respiration would have been affected at the same time, and in the same degree as the pulse; and from this circumstance arises the danger of sudden cold succeeding heat thus raised.

Though the proper use of a cold bath is very strengthening to many, yet if the patient stays in much longer than is necessary for being wholly immersed, he will be weakened by it, and that proportionably to his continuance.

2. WARM BATHING was regarded by the Greeks and Romans not only as an efficacious remedy, but also as one of the highest luxuries. The North-American Indians are very successful in their cures by vapour bathing, which they manage by shutting themselves in a small room, then throwing a very hot stone into a pail of water, and when thus sweated for some time, they plunge into cold water; then return again to receive the hot vapours. The Greeks, at this day, have hot *baths* in their houses, if capable of bearing the expence; if not, public ones are provided by the government for them, which also obliges them to bathe there at certain periods of time, though no disorder be manifest. Many are much strengthened by it; perspiration is also facilitated, which in some skins is much retarded, and thus many diseases are prevented.

It is on the principle of absorption that benefit by the warm, and all medicated *baths*, is said to be caused; but certainly great good is to be expected from the promotion of insensible perspiration, and soliciting the circulation of the fluids to the surface of the body.

Both *cold* and *hot* bathing have been employed in the diseases of useful domestic animals, and there is no doubt but it is a remedy of importance in some of their maladies. In an instance within our knowledge, Mr. MOORCROFT, a respectable veterinary practitioner in London, employed the cold bath successfully in the treatment of *locked jaw* in a horse. The method he took was to have the animal led into a river, and compelled to swim there at certain intervals, and for a certain length of time. This method of *swimming* horses, has been occasionally employed, by farmers, for the cure of lameness, where the principal cause has been a rigidity of the muscles after violent bruises or sprains.

Local bathing, with medical remedies diffused in water, is recommended by Mr. St. BEL. See the article FOUNDER.

If we consider the immediate effect produced by the use of cold or warm bathing, we shall be readily led to perceive their utility in a variety of complaints. The cold bath invigorates the system, increases the tone of the solids and circulation of the fluids, and promotes insensible perspiration; hence becomes a corroborant, deobstruent, and general evacuant: whilst the warm and vapour baths relax the solids, sollicit the fluids externally, and, by these means, greatly promote sensible perspiration, and may be considered as relaxants and evacuants. But we must observe, that the baths should always be proportioned to the state of the constitution, if any benefit is expected to be derived from their application.

BALNEUM ARENÆ, the SAND BATH, called also the DRY BATH, by means of which some chemical processes, requiring an equal and uniform distribution of heat, are carried on. It is generally produced thus: over the mouth of a common wind furnace, place one end of an iron plate, with a ledge round it, and under this plate the canal must run, by which the furnace communicates with its chimney; the plate must then be filled with sand or other dry matter, for placing the medicines to be digested in; the fire then being kindled, the heat will be different in different parts of the plate, and thus, as the things to be digested require more or less warmth, they may, at the same time, be suited by one and the same fire, for the heat of the sand gradually decreases as the plate on which it lies is extended from the mouth of the furnace.

The vessel containing the matter to be heated, hath its bottom and sides totally covered with the sand, and there it is continued until the digestion is completed.

BALNEUM MARIÆ, the WATER or VAPOUR BATH; sometimes it denotes the heat of boiling water merely. This is when the vessel, containing the matter to be treated, is placed in another that is full of water, under which a fire is put, that by this means the water becoming hot, may, in its turn, heat the matter to be digested. When a greater heat than that of boiling water is not required, this method of digestion is preferable to that by the sand bath, because the heat cannot exceed at any time that which is required.

BALSAMICS (from βαλσαμον, *balsam*), are those medicines by which the vital heat is supposed to be increased or restored. The term, however, is very *vague*; it includes medicines of very different qualities, as emollients, detergents, restoratives, &c. But in medicines of all



these kinds there seems to be this requisite in them, viz. that they be soft, yielding, and adhesive; also that by their qualities they have a ready disposition to stimulate. Medicines of this tribe are generally required for complaints whose seat is in the viscera: and as they cannot be conveyed there but by the common road of the circulation, it follows that no great effects can be expected from them but by their long continuance. Hoffman calls those medicines by the name of *balsamics* which are hot and acrid; also the natural balsams, gums, &c. by which the vital heat is increased. Dr. CULLEN considers almost all of the substances called BALSAMS to have the form and consistence of turpentine, and seeming to consist of this for the greater part of their substance; consequently, that they possess similar virtues. See TEREBINTHINA. Though modern chemists are not agreed as to the difference between balsams and resins, still balsams are considered to be fluid, odorous, inflammable substances, and contain a concrete acid, which may be obtained by sublimation or decoction. See CULLEN'S *Materia Medica*.

BALSAMUM (from the Hebrew terms *baal samum*, the prince of oils); called also *balsamum genuinum antiquorum*, *balsameleon*, *Ægyptiacum balsamum*, *bals. Gileadense*, *Asiaticum*, *Judaicum*, *è Mecchâ et Alpini*; *oleum balsami*, *xylobalsamum*, *opobalsamum*, the BALM of GILEAD; which is a resinous juice, obtained from an evergreen tree or shrub, said to grow in Syria and Arabia. The first is called *carpobalsamum*, which is about the size of a small pea with a short pedicle, of a roundish or oval figure, pointed at the top, composed of a dark brown, or reddish black wrinkled bark, marked with four ribs from top to bottom, and a whitish or yellowish medullary substance. This fruit, when in perfection, is said to have a pleasant, warm, bitterish taste, and a fragrant smell, resembling that of the balsam itself. But such as we now meet with in the shops, is almost without smell or taste. It was only ordered in the Theriaca Andromachi, and Mithridate, for which, by the College of Physicians, in London, cubebs were substituted; though now both these compositions are properly rejected. Jamaica pepper is often sold for it. The AMYRIS GILEADENSIS, or OPOBALSAMUM. The Class, OCTANDRIA; Ord. MONOGYNIA; LINN. Gen. Plant. 473. *AMYRIS foliis ternatis integerrimis pedunculis unifloris lateralibus*. The best sort, which naturally exudes from the plant, is scarcely known in Europe. Prosper Alpinus says, that it is at first turbid and whitish, of a strong pungent smell, like that of turpentine, but much sweeter and more fragrant, of a bitter acrid astringent taste: on being kept

it becomes thin, limpid, light, greenish, and then of a golden yellow; after which it is thick like turpentine, and loses much of its fragrance: some compare its smell to that of citrons, others to a mixture of rosemary and sage-flowers.

It does not seem to excel any other of the balsams except in its fragrance; all the balsams agree in their general qualities, differing only in the degrees of warmth, pungency, and gratefulness. The *balm of Gilead* is a warm, stimulating, expectorating, detergent, diuretic cordial, and nervous medicine; its diuretic quality is greatly increased by the addition of a fixt alkaline salt.

The Canadian *balm of Gilead* fir affords a balsam that is often imposed for the genuine sort. If the true balsam is dropped in water, when thin, it spreads itself on the surface, imparting to the water much of its taste and smell, and the grosser part, remaining at the top, is thick enough to be taken up with a needle; this is reckoned a mark of its being genuine. If pure balsam is dropped on a woollen cloth, it may be washed off without leaving the least stain or mark, but the adulterated sticks to the place. The pure coagulates with milk, but the adulterated will not.

BALZANE. See the article WHITE-FOOT.

BANDAGE, a long and narrow slip, or fillet, of flannel, cotton, or linen, used by veterinary surgeons, not only to retain dressings, &c. upon wounds, but also to assist their healing by its gentle and uniform mechanical pressure. This form of bandage, however, can only be applied to the extremities of animals with the latter view; since the successive turns of it require to be accurately laid over each other, a nicety that cannot be observed when the injured part presents an inequality of surface.

Mr. TAPLIN recommends what he calls an *elbow-bandage*, which is nothing more than the elbow portion of an old waistcoat sleeve, and is certainly well adapted to many purposes.

In fractures where the parts require to be kept firmly in their place, bandages of stiffer materials are used; and even outer covers of leather to which a number of straps and small buckles are attached.

The writer last mentioned reckons the COLD-CHARGE, a favourite remedy with the old farriers, to be nothing more, in its effects, than a bandage.

"Nothing," says Mr. TAPLIN, "can be more truly contemptible than the ridiculous and absurd adoption of the ancient practice of *cold charges*; compounded of articles calculated in some degree to what they call *brace the parts*, it is true, but tending much more to form a kind

of bandage by its firmness of adhesion, than medical relief by its power of penetration. And this will be more readily credited when a moment's consideration is afforded to the fact: for what inherent restraining virtues can be possessed by "*dee's hair*, *Armenian bole*, *rye flour*, or *oatmeal*," more than the properties of forming a cement (equal to a bandage) for keeping the parts in a firm and certain position, constituting a pompous prelude to the general idea of REST?

"No one advocate for *cold charges*, or strengthening poultices, will be confident enough to declare they retain a sufficient portion of *stimulus* to penetrate the integuments; and, by their restraining or contracting powers, affect the tone or elasticity of the relaxed *tendon*. If so, I will venture to hazard an opinion, that what efficacy they may hold individually is entirely locked up in the mass of composition, and forms no other merit as a corroborant than a medical substitute for a *bandage of rollers*, &c. with this exception only, that it bears the appearance of business, or sagacity extraordinary, in the *farrier* and *groom* employed in the elaborate preparation; who may prevent their loss of time, and prostitution of judgment, by methods much more eminently entitled to approbation, as founded upon principles of *reason*, and sanctioned by success."

**BANDS of a SADDLE**; two flat, narrow pieces of iron, nailed on each side the bows of the saddle, to retain those bows in the situation which makes the form of a saddle. To put a bow in the band is to nail down the two ends of each band to each side of the bow. Besides these two great bands, the fore-bow has a small one called the wither-band, and a crescent to keep up the wither arch. The hinder bow has likewise a small band to strengthen it.

**BANGLE-EARS**, an imperfection in a horse, remedied in the following manner: place his ears in the manner you would have them stand, and then, with two little boards or pieces of trenchers, three fingers broad, having two long strings knit to them, bind the ears so fast in the places where they are fixed, that they cannot stir. Then behind the head and the root of the ear you will perceive a great deal of empty wrinkled skin, which you are to pull up with your finger and thumb; and with a sharp pair of scissors, clip away all the loose skin close to the head; then, with a needle and silk, stitch the two outsides of the skin together; and with digestive ointment heal up the sore; which done, take away the splints that hold up the ears, and in a short time you will find them keep the place where you set them, without alteration.

**BANGUE** (Indian). Called also *bangue canabi* simile, *cannabis Indico trifoliata bangue Indorum*; *cansjava*, called by the Egyptians *affis*; *afferac cannabis peregrina*, *althea foliis cannabinis*, *kalengi-cansjava*, *tyseru-cansjava*.

It resembles hemp in its stalk, the rind of the stalk, and the leaves; but its medicinal qualities differ very much. The seeds and leaves are heating, and possess some of the qualities of opium. It grows in Hindoostan, and other parts of the East Indies.

**BANQUET**, that small part of the branch of a bridle under the eye, which, being rounded like a small rod, gathers and joins the extremities of the bit to the branch, in such a manner, that the banquet is not seen, but covered by the cap, or that part of the bit next the branch.

**BANQUET-LINE**, is an imaginary line drawn by the bit-makers, along the banquet, in forging a bit, and prolonged upwards and downwards to adjust the designed force or weakness of the branch, in order to make it stiff or easy. For the branch will be hard and strong, if the sevil hole be on the outside of the banquets, with respect to the neck: and it will be weak and easy, if the sevil hole be on the inside of the line, taking the centre from the neck. See the articles **BRANCH** and **SHOULDER**.

**To BAR a VEIN**, an operation performed by farriers upon the veins of a horse's legs and other parts of his body, with intent to obliterate the vein when become diseased or varicous. In order to bar a vein, the farrier opens the skin above it, and after disengaging it, and tying it above and below, he divides the vessel between the two ligatures.

**BARB**, or **BARBE**, a kind of horse brought from Barbary, much esteemed for its beauty, vigour, and swiftness. See **HORSE**. These horses are usually very beautiful; they are of a slender make, and have very fine limbs and fine turned bodies. The Spanish and English horses have much fuller bodies, and larger legs. The barb is little inferior to the **ARABIAN** or **TURKISH** horse; but he is esteemed by our dealers too tender and delicate to breed from. The Turkish and the Spanish horses are therefore usually kept for this purpose, by the nicer judges.

**BARBATUS** (from *barba*, a beard). In botany, it means bearded; as some corn is; or covered with a downy substance.

**BARBS**, or **BARBLES**, small excrescences under the tongue of a horse, which may be discovered by drawing it aside. They are cured by cutting them close off, and touching the roots with **LUNAR CAUSTIC**.



**BARBULÆ** (from *barba*, a beard), the half-florets of compound flowers.

**BARDANA MAJOR**, called also *lappa major*, *arctium lappa*, *personata arctium* *Discoïdis*, *Britannica*, **CLOTBUR**, or **GREAT BURDOCK**. It is the **ARCTIUM LAPPA**, or the *arctium major*, *folius cordatis inernibus petiolatis*. The Class **SYNGENESIA**; Ord. **POLYGAMIA ÆQUALIS**; LINN. Gen. Plant. 923. The roots have very little smell, but a sweetish taste, with a light bitterness and roughness. Boiled in water, they impart a brownish colour, and a soft vapid kind of taste. Extracts, however made, are as insipid as the root. They are chiefly commended as diuretic, diaphoretic, and antiscorbutic, and have been successfully employed in a great variety of chronic diseases in the human subject; particularly in those cases in which china and sarsaparilla roots are prescribed, for they resemble them in all their sensible qualities. This plant has been often given in the diseases of horses and cattle. Mr. St. Bel and Mr. John Lawrence both include it in their prescriptions: but whether it be really useful for veterinary purposes, remains to be ascertained by decisive experiments.

**BARK**, in the anatomy of plants, the exterior part of trees, corresponding to the skin of an animal. As animals are furnished with a panniculus adiposus, usually replete with fat, which invests and covers all the fleshy parts, and protects them from external injury; plants are encompassed with a bark, by means whereof the cold is kept out, and in winter-time the spiculæ of ice prevented from fixing and freezing the juices in the vessels; whence it is, that some sorts of trees remain green the year round. The bark of trees in general is of a spongy texture; and, by many little fibres which pass through the capillary tubes, whereof the wood consists, it communicates with the pith; so that the proper nutriment of the tree, being imbibed by the roots, and carried up through the vessels of the tree by the warmth of the soil, &c. to the top of the plant, is usually supposed to be there condensed, and in that form returns by its own gravity down the vessels, which do the office of veins, lying between the wood and inner bark; leaving, as it passes by, such parts of its juice as the texture of the bark requires for its support. That soft whitish rind or substance between the inner bark and the wood, which Mr. Bradley thinks does the office of veins, some account a third bark, only differing from the other two in that its fibres are closer. It is this contains the liquid sap, gums, &c. found in plants in the

spring and summer months. It hardens by little and little, by means of the sap it transmits, and is converted imperceptibly into the woody part of the tree. There are few trees without it; yet it is still found in less quantity as the tree is more exposed to the sun: that of the oak is ordinarily about an inch thick. It is here that the decay of trees generally begins; whence those who fell and cut out trees, ought always to take care to leave as little of it on as possible.

The bark of roots is sometimes yellow, as in dock; sometimes red, as in bistort; but oftentimes white. It is derived from the seed itself, being only the extension of the *parenchyma* of the radicle. It is of various degrees of substance, being sometimes very thin, as in the Jerusalem artichoke, and in most trees: yet sometimes it is very thick, and makes the greater part of the substance of the root, as in asparagus and dandelion. In beet-root, the bark scarce exceeds a good thick skin; whereas in a carrot, it is half the semi-diameter of the root, being in some places above an inch over. This too is found common to the generality of roots, that their barks are proportionably thicker at bottom than at top.

The inner part of the bark, we have observed, annually lignifies, or turns to wood. The bark of a tree is found each year to divide and distribute itself two contrary ways: the outer part gives towards the skin, till it becomes skin itself, and at length falls off, like the human cuticle, or the *exuvie* of serpents; while the innermost portion is yearly distributed and added to the wood.

The bark is found truly continuous to the body of a tree, as the skin of our body is to the flesh; contrary to the common opinion, that the bark only surrounds the tree, as a scabbard does a sword, or a glove the hand; which seems confirmed by the easy slipping of the bark of willow, and most other trees, when full of sap, from the wood. Their continuity is effected by means of the *parenchyma*, which is one entire body, running from the bark into the wood, and thus uniting both together. The reason why the bark slips so easily from the wood is, that most of the parenchymous parts are young vessels, formed every year successively between the wood and the bark, and are much in the condition of the tender vessels or fibres of the embryo in a womb, or egg; a thousand of which are broke with the smallest force. That trees only live by the ascent of the sap in or between the bark and the wood, and that if a circle be drawn round any tree (except, perhaps, ash) by incision

to the timber, how thin soever the knife be, provided no part of the thickness of the bark remain uncut, the tree will die from that part upwards, has been the standing doctrine of naturalists of all ages, and is delivered for fact by Pliny and others. Dr. Plott asserts this to be a popular error, from the instance of a large old elm in Magdalen-college grove, quite disbarked around, at most places two feet, at some four feet, from the ground, which yet grew and flourished many years, as well as any tree in the grove. Besides, it was entirely without pith, being hollow within as a drum: and the same is confirmed from the history of the elm in the Tuilleries, related by M. Parent, which lived and put out leaves, though entirely stripped of bark from top to bottom. Add to this that the plane and cork trees divest themselves yearly of all their old bark, and acquire new, as snakes do their skins; and in the change from one to the other, it is evidently not by the bark that they are nourished. Some infer from hence, that the bark never feeds the wood; but Dr. Plott is more reserved in his conclusion, arguing only, that hence it seems to follow, that there must be other vessels, besides the sap-vessels of the bark, capable of the office of conveying sap. It is probable when the ordinary conveyance fails, some of the woody part, which had all once been sap-vessels, resumes its ancient office; or, as the author last mentioned conjectures, they still so far retain their office of conveying sap, as to keep a tree alive, though not to augment it; which may, perhaps, be one different use of those sap-vessels in the wood from those in the bark, the former being sufficient for the continuation of a tree, and the latter serving only for its augmentation.

Mr. Brotherton however has related some experiments, which seem to decide the controversy by shewing that the bark is not the vehicle of vegetation. He hacked a crab-tree all round with a hatchet, so as, besides cutting off the bark, to cut pretty deep into the wood, for the breadth of about four inches; yet the same year it was observed to increase very considerably in thickness above the divided part, and to shoot in length of wood about one foot. The next year it also grew considerably, and shot in length five inches; but on the third year it died to the very root. The same happened to another tree, part of whose bark was eaten off by the canker: the lower part stood without increase, and by degrees the wood rotted: the upper part increased to the third year, and then died also. The same writer found, that, in the branches of the Scotch fir, the joints above the rings barked would grow

much larger in three years, than in five if the rings were not cut off. A ring of bark three inches broad being cut off a Scotch fir, near the bottom of the stem, below the uppermost knot or joint, was found to grow and shoot out at its top half a yard, and all the parts above the ring to increase in thickness the same year, much more than they would have done, had not the section been made; but all the part of the stem between the ring and the next knot below it did not grow at all: the part below the ring next under that, increased in some degree, though less than it would have done, if the bark had not been cut off. The second year the increase was also considerable; but on the third year it died. Phil. Transf. No. 187.

M. Magnol mentions an olive-tree, from which a circular ring of bark being cut away, the tree that year bore, above the place of incision, double the quantity of flowers and fruit which it used to bear. Mr. Reneaume relates a fact nearly similar to this. In the country about Aix and Marseilles, when an olive-tree grows old, and almost ready for felling, they have a method of making it first yield all the fruit which it is capable of producing, by cutting a circular ring of bark, an inch broad, from one of its young branches, and in its place putting an equal ring of bark taken from the branch of a young bearing olive-tree. The effect of this engraftment is, that the branches of the old tree bear plentifully the ensuing year, and those of the young one die away. Hist. Acad. Sc. 1711. On the whole, Mr. Brotherton concludes, that most of the sap, if not all, ascends in the vessels of the woody part, and not by the bark, nor between the bark and the wood. Mr. Lewenhoeck, on the other hand, has given several experiments and observations with the microscope, to shew that the bark of trees is produced from the wood, and not the wood from the bark. See Philos. Transact. No. clxxxvii and No. ccii. Be this as it may, it is very remarkable, that trees stripped in the time of the sap, and suffered to die, afford timber heavier, more uniformly dense, stronger, and fitter for service, than if the tree had been cut down in its healthy state. Something of a like nature has been observed by Vitruvius and Evelyn. Mem. Acad. Scienc. 1738.

As animals are furnished with a *panniculus adiposus*, usually replete with fat, which invests and covers all the fleshy parts, and screens them from external cold, plants are encompassed with a bark replete with fatty juices, by means whereof the cold is kept out, and, in winter-time, the *spicula* of ice prevented from fixing



and freezing the juices in the vessels: whence it is, that some sort of trees remain green the year round; because their barks contain more oil than can be spent and exhaled by the sun, &c. Ray's Wild. of God, &c. part i. p. 103.

Boerhaave mentions eight different species of juices lodged in the bark, viz. the watery sap or chyle, an oil, balm, pitch, resin, colophony, gum, and gummous resin.

The bark has its peculiar diseases, and is infected with insects peculiar to it. Moss is a disease of the bark. Wounds of the bark often prove mortal.

Of the bark of willows and linden trees is ordinarily made a kind of ropes. The Siamese make their cordage of the bark of the cocoa tree, which is also the case in most of the Asiatic and African nations. In reality, flax and hemp, with all their toughness, are only the sap-vessels, or lignous fibres of the bark of those plants.

There are a great many kinds of bark used in the several arts: some in Medicine, as the CINCHONA, or JESUIT'S bark, *macer, cascarilla*, &c.; others in Dyeing, as the bark of the alder; others in Spicery, as CINNAMON, *cassia lignea*, &c. Oak bark is used in Tanning: others on other occasions, as cork: that of a kind of birch is used by the Indians for canoes capable of holding twenty-four persons.

BARK, PERUVIAN. See CINCHONA.

BARLEY, a genus of the digynia order, belonging to the triandria class of plants; and in the natural method ranking under the 4th order, *Gramina*. The calyx is lateral, bivalved, unisporous, and triple. The involucre consists of six leaves, and contains three flowers. There are eight species; only one of which, viz. the murinum, or wall-barley grass, is a native of Britain. The native place of the vulgare, or common barley cultivated in our fields, is not known.

All the sorts of barley are sown in the spring of the year, in dry weather: in some very dry light land, it is sown early in March, but in strong clay soils, it is not sown till April, and sometimes not till the beginning of May; but when it is sown so late, if the season does not prove favourable, it is very late in Autumn before it is fit to mow; unless it be the ratli ripe sort, which is often ripe in nine weeks from the time of sowing. Some have steeped the seed before sowing it, and have found the practice very beneficial.

Some people sow barley upon land where wheat grew the former year; but where this is practised, the ground should be ploughed the

beginning of October in a dry time, laying it in small ridges, that the frost may mellow it. This will improve the land greatly; and if it be ploughed again in January, or the beginning of February, it will break and prepare the land better. In March it should be ploughed again deeper, and be laid even where it is not very wet: but in strong wet land the ground should be laid round, and the furrows be made deep to receive the wet. When this is finished, the common method is to sow the barley-feed with a broad cast at two sowings, the first being harrowed in once, the second is harrowed until the seed is buried. The common allowance of seed is four bushels to an acre. After the barley is sown and harrowed in, the ground should be rolled after the first shower of rain, to break the clods and lay the earth smooth; which will render it easier to mow the barley, and also cause the earth to lie closer to the roots of the corn, which will be of great service to it in dry weather. Where barley is sown upon new broken-up land, the usual method is to plough up the land in March, and let it lie fallow until June, at which time it is ploughed again, and sown with turnips, which in winter are eaten by sheep, by whose dung the land is greatly improved; and then in March following the ground is ploughed again, and sown with barley as in the former case.

There are many people who sow clover with their barley, and some have sown lucern with it; but neither of these methods is to be commended; for where there is a good crop of barley, the clover or lucern will be weak. The better way is to sow the barley alone, and then the land will be at liberty for any other crop when that is taken off the ground. In some instances the clover has been sown a month after the barley, and found to answer. When the barley has been up three weeks or a month, it will be a very good method to roll it with a heavy roller, which will press the earth close to the roots, and keep the sun from penetrating the ground in dry seasons: and this rolling it before it stalks will cause it to send out a greater number of stalks; so that if the plants should be thin, this will cause them to spread so as to fill the ground, and likewise strengthen the crop very considerably.

The time for cutting barley is when the red colour of the ears changes, when the straw turns yellow, and when the ears begin to hang down. In the north of England they always reap their barley, and make it up into sheaves, as is practised in other places for wheat; by which means they do not lose near so much corn, and it is.

also more convenient for stacking. But this method cannot be so well practised where there are many weeds among the corn, which is too frequently the case in the rich lands near London, especially in moist seasons. Therefore, when this is the case, the barley must lie on the swarth until the weeds are dead; yet as it is apt to sprout in wet weather, it must be shook up and turned every fair day, after rain, to prevent this. When it is carried it should be thoroughly dry, for if it be stacked wet, it will turn musty; and if too green, it is subject to heat in the mow.

The common produce of barley is two and a half, or three quarters, on an acre; but a much greater produce is sometimes found on land that has been judiciously managed.

The principal use of barley among us is for making beer; in order to which it is first malted. The Spaniards, among whom malt liquors are little known, feed their horses with barley as we do with oats. In Scotland, barley is a common ingredient in broths; and the consumption of it for that purpose is very considerable, *barley-broth* being a dish as frequent there as that of *soup* in France.

This grain is well known as an article of food for some domestic animals. Even the refuse parts, after the processes of malting, grinding, and infusion, have been exercised on it, are found to yield considerable nourishment to cows, pigs, &c. To the horse, however, it is seldom given, except under the notion of DIET, on which occasions it is said to be aperient, and cooling in its effects. Barley is, on these accounts, introduced by the purveyors of the turf into the *bread* which is given to race horses to prepare them for the course. See BREAD.

BARNACLES, called also HORSE-TWITCHERS, or BRAKES; instruments usually put upon the upper lip of a horse, to make him stand quiet, in order to be shod, blooded, or dressed for any fore. Some call them pinchers; but they differ from pinchers, as the latter have handles, to hold by; whereas the barnacles are fastened to the nose with a lace or cord. There is another sort of barnacles, used when in want of the former, called ROLLER-BARNACLES, or wood-twitchers, which are only two rollers of wood bound together, with the horse's nose between them. See the article MAURAILLE.

BARS, or BINDERS; those portions of the crust or hoof of a horse that are reflected inwards, and form the arches which are situated between the heels and the frog. "They are formed," says Mr. St. BEL, "by the continua-

tion of the fibres of the heels, which turn towards each other; and, advancing to the extremity of the frog, where they meet, form an acute angle; and acting by mutual resistance from within, outwardly oppose the contraction of the heels." See FOOT.

BARS, also denote the fleshy rows that run across the upper part of the mouth, and reach almost quite to the palate, very distinguishable in young horses. On the bars the bit should rest and have its appui; for, though a single cannon bears upon the tongue, the bars are so sensible and tender that they feel the effects of it through the thickness of the tongue.

The bars should be sharp ridged, and lean; for since all the subjection a horse bears proceeds from these parts, if they have not those qualities, they will be very little or not at all sensible; so that the horse can never have a good mouth. If the bars be flat, round, and insensible, the bit will not have its effect, and consequently such a horse can be no more governed by his bridle, than if we took hold of his tail.

BARTH, a warm place, or pasture, for calves and lambs.

BARYTES (from *βαρυς*, heavy), an earth generally known by the name of TERRA PONDEROSA, or ponderous earth; and it is to the celebrated chemists Gahn, Scheele, and Bergmann, that we are principally indebted for our knowledge of this earthy substance. It has not yet been found free from all combination; but in order to obtain it in a suitable degree of purity, the following process may be employed: The sulphate of barytes, or ponderous spar, which is the most usual combination met with in the earth, is to be pulverized, and calcined in a crucible, with an eighth part of powder of charcoal: the crucible must be kept ignited during an hour; after which the calcined matter is to be thrown into water: it communicates a yellow colour to this fluid, at the same time that a strong smell of hepatic gas is emitted; the water is then to be filtered, and muriatic acid poured in: a considerable precipitate falls down, which must be separated from the fluid by filtration. The water which passes through the filter holds the muriate of barytes, or marine salt of ponderous earth, in solution. A solution of the carbonate of pot-ash, or mild vegetable alkali, being then added, the ponderous earth falls down, in combination with the carbonic acid; and this last principle may be driven off by calcination. Pure barytes is of a pulverulent form, and extremely white. It is soluble in



about nine hundred times its weight of distilled water, at the temperature of sixty degrees, according to Mr. Kirwan. The prussiate of potash, or Prussian alkali, precipitates it from its combination with the nitric and muriatic acids, which habitude distinguishes it from other earths. It also precipitates alkalies from their combinations with acids. Mr. Lavoisier having exposed barytes to a flame fed with oxygenous gas, found it to be fused in a few seconds: at first it extended itself upon the surface of the coal; after which it began to burn and detonate until the whole was nearly dissipated. This kind of inflammation is a character common to metallic substances; but when the barytes is pure it is perfectly infusible. When fused in the fire with the flux or alumine of the crucible, it assumes a blue or green colour. This earth urged by the blow-pipe makes little effervescence with soda, but is perceptibly diminished: it dissolves in the borate of soda with effervescence, and still more with the phosphates of urine. It has a strong affinity for acids, and serves to detect the presence of the sulphuric acid. Its specific gravity, according to Mr. Kirwan, exceeds 4000.

*Earthy Salts with Base of Barytes.*—The most common state in which barytes is found is that of combination with the sulphuric acid.

*Sulphate of Barytes.*—This substance, which is generally called *Ponderous Spar*, is extremely heavy. Its specific gravity is commonly from 4 to 4.6. It decrepitates in the fire, melts before the blow-pipe without addition, and fluxes dissolve it with effervescence. Mr. Darcet has succeeded in fusing it in a porcelain furnace. This spar has been often confounded with gypsum and fluor spar; but the characters of these two substances are very different. It almost always accompanies metallic ores, and it is even considered as an happy preface of finding them. The analogy between this stone and metals has been established by the experiments of Bergmann and Lavoisier. This stone, when rather strongly heated, exhibits a blueish light in the dark, and forms what has been called the *Bolognian Phosphorus*. To form these kinds of phosphori, the spar is pulverized, the powder is kneaded up with mucilage of gum-tragacanth, and the paste is formed into pieces as thin as the blade of a knife. These pieces are afterwards dried, and strongly calcined by placing them in the midst of the coals of a furnace; they are afterwards cleared by blowing on them with the bellows. In this state, if they be exposed to the light for a few minutes, and afterwards carried into a dark place, they shine like glowing coals. These pieces shine even under water; but they gra-

dually become deprived of this property, which however may be restored again by a second heating. Ponderous spar is easily divided into plates by the slightest blow; and the most usual form which it affects is that of an hexahedral prism, very flat, and terminated by a dihedral summit.

It has been found at the distance of one league from Clermont d'Auvergne, in France, in the form of hexahedral prisms terminated by a tetrahedral or dihedral pyramid. Mr. Chaptal has seen it in crystals of two inches in diameter. It frequently happens that the form of these crystals is not very determinate; but all the stony substances of the nature of these exhibit a confused assemblage of several plates applied one upon another, and capable of being separated by a very slight blow. Ponderous spar is insoluble in water; and upon this property is founded the virtue possessed by the muriate of barytes, to manifest the slightest portions of sulphuric acid in any combination which contains it. Barytes adheres more strongly to acids than the alkalies themselves do; and when the carbonates of alkalies precipitate it, the effect takes place in the way of double affinity, or attraction.

*Carbonate of Barytes.*—This combination of the carbonic acid with barytes has the specific gravity of 3.773. One hundred parts contain twenty-eight of water, seven of acid, and sixty-five of pure earth. The sulphuric, nitric, and other acids attack it with effervescence. Although the carbonic acid possesses the strongest affinity with this earth, it is not very frequently found in combination with it. This substance has been lately found in great plenty in the lead mines at Anglezark near Chorley in Lancashire, and also at Strontian and Dungleas near Dumbaron in Scotland.

*Nitrate of Barytes.*—The nitric acid dissolves pure barytes, and forms a salt which crystallises sometimes in large hexagonal crystals, and frequently in small irregular crystals. This nitrate is decomposed by fire, and affords oxigene. The pure alkalies do not disengage the barytes, but the alkaline carbonates precipitate it by double affinity. Both the sulphuric and fluoric acids take this earth from the nitric acid. The nitrate of barytes has not yet been found in a native state.

*Muriate of Barytes* is a salt which is capable of assuming a form considerably resembling that of spar in tables or plates. It exhibits, with the earths, acids, and alkali, phenomena nearly similar to those of the nitrate of barytes. It forms one of the most interesting re-agents to ascertain the existence of the smallest particle of sulphuric

salt in any water; because, by the sudden exchange of principles, the result is ponderous spar, which immediately falls down. This substance has not yet been found in a native state.

Mr. JOHN LAWRENCE informs us, that the Society of Health at Paris have employed themselves in making experiments with the internal use of the muriatic, and the carbonate of barytes, recommended by Dr. Crawford in the Scrophula. They appointed citizens Huzard and Biron, of the veterinary class, to try the effects of this active and powerful medicine upon horses; but the result was unfavourable. Some horses in a confirmed FARCY took two drachms a-day each, both of the muriatic and the carbonate, which in a very short time seemed to make a complete cure: in less than three weeks however they died, without discovering, on being opened, any signs of the action of the medicine. Others under the like experiments have since died without any previous tokens of sickness. Mr. Lawrence thinks it probable that these trials were made with too large doses.

**BASILARIS ARTERIA.** It is a branch of the vertebral artery, upon the apophysis *basilaris* of the os occipitis. The two vertebral arteries soon unite, after they have got into the skull, and form this artery about the cuneiform process of the os occipitis. It runs forward under the great transverse protuberance of the medulla oblongata, to which it gives ramifications, as well as to the neighbouring parts of the medulla. Sometimes it divides into two branches from about the apophysis *basilaris*, which communicate with the posterior branches of the two internal carotids, and are lost in the posterior lobe of the brain.

**BASILICUM**, a well-known ointment, now called **UNGUENTUM RESINÆ FLAVÆ**, OINTMENT of YELLOW ROSIN. It is prepared thus:

Take of olive oil a pint;

Yellow wax,

Yellow rosin, of each a pound.

Melt the wax and rosin over a gentle fire, then add the oil, and strain the mixture while hot.

It is commonly employed as a digestive on wounds and ulcers: it is as useful as the ointment of gum-elemi. For veterinary uses it is required to be warmed with some oil of turpentine, to be added at the time of application.

**BASIS** (from *βασις*, *fixus sum*, *I am fixed*). The support of any thing upon which it stands or goes. The broad part of the heart is called its *basis*, to distinguish it from the apex or point. In pharmacy, by *basis* is meant that ingredient on which the most stress is laid for answering the intention of any compound medicine.

**BASTARD STRANGLES**, a name given by common farriers to the STRANGLES in horses, when the disease is particularly violent, and accompanied with a discharge from the nostrils.

**BATH.** See **BALNEUM**.

**BAY**, a colour in horses, so called from its resembling the colour of a dried bay-leaf. There are various degrees of this colour from the lightest bay to the dark, which approaches nearly to the brown, but is always more gay and shining. The bright bay is an exceedingly beautiful colour, because the bright bay horse has generally a reddish hue, with a gilded aspect, his mane and tail black, with a black or dark list down his back. The middle colours of bay have also frequently the black list, with black mane and tail. And the dark bays have almost always their knees and pasterns black; and we meet with several sorts of bays, that have their whole limbs black from their knees and hocks downwards. The bays that have no list on their backs, are, for the most part, black over their reins, which goes off by an imperceptible gradation from dark to light towards the belly and flanks. Some of these incline to a brown, and are more or less dappled. The bay is one of the best colours, and horses of all the different kinds of bay are commonly good, unless when accidents happen to spoil them while they are colts.

**BAY, OIL OF**, an expressed oil procured from a species of the laurus. See **LAURUS**. It is an ingredient in some of the unguents of the old farriers; but, having no active properties of any consequence, it is only of use as a vehicle for other remedies. It appears sometimes as an ingredient in *blistering ointments*, joined with cantharides.

**BAYARD**, a bay HORSE.

**BAYBERRIES.** See **LAURUS**.

**BDELLIUM** (from the Arabic term *bedal-lah*); called also *medalion bolchou*, *balchus*, and by the Arabians *mokel*; is a gummy resinous juice, produced by a tree in the East Indies, of which we have no satisfactory account. It is brought into Europe both from the East Indies and Arabia. It is in pieces of different sizes and figures, externally of a dark reddish brown, somewhat like myrrh; internally it is clear, and not unlike glue; to the taste it is slightly bitterish and pungent; its odour is very agreeable. If held in the mouth, it soon becomes soft and tenacious, sticking to the teeth. Laid on a red-hot iron, it readily catches flame, and burns with a crackling noise, and, in proportion to its goodness, it is more or less fragrant.



Near half of its substance dissolves either in water or in spirit of wine; but the tincture made with spirit is somewhat stronger, and much more agreeable. Vinegar, or verjuice, dissolves it wholly.

The simple gum is a better medicine than any preparation from it. It is one of the weakest of the deobstruent gums; but we occasionally find it has a place in the receipts of the older writers on farriery.

**BEAGLE**, a hunting dog, of which there are several sorts, particularly, 1. the *southern beagle*, which is something less than the deep-mouthed hound, and something thicker and shorter. 2. The fleet *northern*, or *cat beagle*, which is smaller and of a finer shape than the southern beagle, and is a hard runner. These two beagles, by crossing, breed an excellent sort, which are great killers.

There is also a very small sort of beagle, not bigger than a lady's lap-dog, which is used for hunting the rabbit, and also the small hare, if the weather be dry; but they are too small to be of much service. See **CANIS**.

**BEANS**, *Vicia*, in botany: a genus of plants of the class *diadelphia*, and order of *decandria*; and in the natural system arranged under the 32d order *Papilionaceæ*. The stigma is bearded transversely on the lower side. There are 20 species, seven of which are natives of Britain. The most important of these are, 1. The *fativa*, common vetch, or tare. The stalks are round, weak, branched, about two feet long. Pinnæ five or seven pair, a little hairy, notched at the end. Stipulæ dentated. Flowers light and dark purple, on short pedicles, generally two together; pods erect; seeds black. It is known to be an excellent fodder for horses. 2. The *cracca*, tufted vetch. It has a stem branched, three or four feet long. Leaves pinnated; pinnæ generally ten or twelve pairs, lance-shaped, downy. Stipulæ entire. Flowers purple, numerous, pendulous, in imbricated spikes. It is also reckoned an excellent fodder for cattle. 3. The *faba*, or common garden bean. It is a native of Egypt. It is too well known to require description.

The soils on which beans are most successfully cultivated are of the stiff or strong moist kind. They do not thrive very well on warm dry lands. If the inclosures on which they are sown be open, it is also advantageous. They are frequently sown on land which is fresh broken up, being of considerable use in breaking and pulverising the ground, and also in destroying weeds, so that the land is rendered much better for corn, after a crop of beans, than it would have been

before, especially if they are sown and managed according to the new husbandry.

The season for sowing beans is from the middle of February to the end of March, according to the nature of the soil; the strongest wet soil should always be last sown. The usual quantity of beans sown on an acre of land is about three bushels, though this is double the quantity that is necessary when the new husbandry is employed.

The common method of sowing is after the plough, in the bottom of the furrows; but in this case the furrows should not be more than five, or at most more than six inches deep. If the land be newly broken up, it is usual to plough it early in the autumn, and let it lie in ridges till after Christmas, then to plough it in small furrows, and lay the ground very smooth. These two ploughings will break the ground fine enough for beans; and the third ploughing is for sowing the beans, when the furrows are to be made shallow.

In the common practice many farmers set their beans too close: for as some lay the beans in the furrows after the plough, and others lay them before the plough, and plough them in, by both methods the beans are laid as close as the furrows are made, which is much too near: for when they are generally drawn up to a very great height, they are not so apt to pod as when they have more room, and are of a lower growth. It is a better way, therefore, to make the furrows three feet asunder or more; which will cause them to branch out into many stalks, and bear in greater plenty than when they are closer: by this method less than half the quantity of beans will be sufficient for an acre of land, and, from being more exposed to the air, they will ripen much earlier, and more equally, than in the common method.

In planting beans according to the drill husbandry, the ground should be four times ploughed before they are set, in order to break the clods, and reduce it to a proper state. A drill-plough is then to be used, to which a hopper is fixed for setting the beans; the drills should be made at three feet asunder, the spring of the hopper being set so as to scatter the beans at three inches distance in them. By this method less than one bushel of seed will plant an acre of land. When the beans are up, if the ground be stirred between the rows with a horse-plough, it will destroy all the young weeds; and when they are advanced about three or four inches high, the ground should be again ploughed, between the rows, and the earth laid up to the beans. If a third ploughing about five or six

weeks after this be given, the ground will be kept clear from weeds, and the beans will stalk out, and produce a much greater crop than in the common manner.

Various kinds of beans are cultivated in different parts. In Kent, the following sorts are chiefly known: The *common ticks*, the large *flat ticks*, or *May-beans*, *small* or *Essex ticks*, and *French ticks*: and of the garden-beans, the *Toker*, *Windsor*, *long-pod*, *Spanish* or *Lisbon*, and *Mazagan*. They have also a few other varieties, but which are cultivated only in small quantities. The first is however the sort most generally cultivated by the farmers in that county, and is used for fattening hogs, and as food for horses. They are commonly either drilled, dropped by hand, or boxed, in furrows eighteen inches apart, from three and a half to four bushels per acre, in February and March; and in either case they are mostly hand and horse hood twice, and sometimes three times, and finally hand-weeded. The *May-beans* are a larger sort of *ticks*, and somewhat earlier ripe: they are sometimes very productive; but, being larger, are in consequence not so heavy, nor so valuable. Sometimes four bushels and sometimes four and a half of this kind of beans are dropped in by hand per acre; but in other respects they are managed in the same way as the *common tick* beans. The *Essex ticks* are a much smaller sort than the *common tick*, and of a rounder shape. They ripen six or eight days later than the first kind, and are not so productive, but more valuable on account of their great weight. The small *French ticks* are a still less sort, being about as big as a moderate sized pea, and nearly circular; this is the latest ripening sort known, and most valuable when dry, on account of their great weight. It is said they will grow on some sorts of poor land, not well adapted for the larger kinds; but they are not very productive. Three bushels per acre of these two small kinds is a sufficient quantity to seed the land when drilled; which is probably the best method of putting them in the ground. The *Toker* is the largest garden-bean, and somewhat of an oval shape. Several of them are met with of an inch and a half in length. The quantity of seed is commonly about five and a half or six bushels to the acre. The beans are dropped by hand, in rows about twenty inches apart, as soon as the land is sufficiently dry in the spring. They should be kept perfectly free from weeds during the summer, and be pulled up by hand in harvest. The produce is sometimes very abundant. The *Windsor-bean* is rather less than the *Toker*, shorter, and approaches more to a square form.

It is managed in the same way as the last kind in every respect, except a little less seed being required.

The *long pod* is only about half as large as the *Toker*, but a more early sort. They are commonly dropped by the hand in rows about a foot and a half apart; and the quantity of seed necessary is about four bushels and a half to the acre. The *Spanish* or *Lisbon* is a kind of bean which is still smaller, but which ripens about the same time. The *Mazagan* is the smallest of any of the garden beans, but the most early ripe. This sort is frequently drilled in the quantity of four bushels to an acre.

In the vale of Aylesbury it is common to plough two furrows on each outside of the land, without sowing any beans in them; then to drill the three next furrows; then plough two furrows again without drilling beans in them; and so on, sowing three, and leaving two for intervals, till the land is finished. At the time when the beans are about two or three inches high, it is necessary to plough two furrows up each interval, turning the furrows from the beans, so as to make a ridge in the middle of each interval. This is done with a little plough on purpose, which is drawn by one horse. This work should be done after rain. The intervals are now to be harrowed with a triangular harrow, in what is called cross-tining. By this means the land is laid quite smooth, kept clear from weeds, and the beans have a fine loose mould to strike their roots into.

When the beans are ripe, they are either reaped with a hook, or mown; and after having lain a few days on the ground, they are turned several times until they are dry enough to stack; but it is a better method to tie them in small bundles, and set them upright.

Beans should lie in the mow to sweat, before they are threshed out; for as the haulm is very large and succulent, it is very apt to give and grow moist; but there is no danger of the beans receiving damage, if they are stacked tolerably dry, because the pods will preserve the beans from injury; and they will be much easier to thresh after they have sweated in the mow than before; and after they have once sweated and are dry again, they never give. The produce by the new husbandry would seem to be much greater than by the old.

Beans form a part of the food of horses, and are chiefly used in mixture with bran or chaff, though by some upon the road, with oats. They are however mostly given to coach-horses and such as are constantly in draught. They afford the strongest nourishment of all kinds of grain,



and will enable horses to go through a great deal of heavy labour. See **FOOD**.

**BEARD OF A HORSE**; called also by jockeys, the **UNDER BEARD**; that part beneath the lower mandible on the outside, and above the chin, which bears the curb of the bridle. It is also called vulgarly the **CHUCK**. See **CURB** and **GENETTE**. The beard of a horse should neither be too high raised, nor too flat, so that the curb may rest in its right place. It should have but little flesh about it, and be almost nothing but skin and bone, without any kind of puffiness, hardness, or swelling.

**BEAST**, a name properly belonging to brutes in general; but used, in a more limited sense, to denote those useful domestic animals which are the objects of attention with farmers and graziers, particularly horned cattle. See **ANIMAL**.

In Mr. JOHN LAWRENCE's enlightened "Treatise on Horses," we find the following humane and sensible arguments in behalf of "*The rights of Beasts*," which are worthy the attention of every one to whom the care of brute animals habitually belongs, and especially of the veterinary practitioner, who has such frequent opportunities of impressing them on the minds of grooms, coachmen, and menial servants in husbandry.

"It is but too easy," says he, "to demonstrate, by a series of melancholy facts, that brute creatures are not yet, in the contemplation of any people, reckoned within the scheme of general justice; that they reap only the benefit of a partial and inefficacious kind of compassion. Yet it is easy to prove, by analogies drawn from our own, that they also have souls; and, perfectly consistent with reason, to infer a gradation of intellect, from the spark which animates the most minute mortal exiguity, up to the sum of infinite intelligence, or the general soul of the universe. By a recurrence to principles, it will appear, that life, intelligence, and feeling, necessarily imply rights. Justice, in which are included mercy, or compassion, obviously refers to sense and feeling. Now, is the essence of justice divisible? Can there be one kind of justice for men, and another for brutes? Or is feeling in them a different thing to what it is in ourselves? Is not a beast produced by the same rule, and in the same order of generation, with ourselves? Is not his body nourished by the same food, hurt by the same injuries; his mind actuated by the same passions and affections which animate the human breast: and does not he also, at last, mingle his dust with ours, and in like manner surrender up the vital spark to

the aggregate, or fountain of intelligence? Is this spark, or soul, to perish because it chanced to belong to a beast? Is it to become annihilate? Tell me, learned philosophers, how that may possibly happen.

"If you deny unto beasts their rights, and abandon them to the simple discretion of man, in all cases, without remedy, you defraud them of those benefits and advantages, ceded to them by Nature herself, and commit a heinous trespass against her positive ordinances, as founded on natural justice. You deprive them, in a great measure, even of compassion. But, previous to an attempt to vindicate the rights of animals, it is no doubt necessary to determine, specifically, in what they consist. They arise then, spontaneously, from the conscience or sense of moral obligation in man, who is indispensably bound to bestow upon animals, in return for the benefit he derives from their services, *good and sufficient nourishment, comfortable shelter, and merciful treatment; to commit no wanton outrage upon their feelings, whilst alive, and to put them to the speediest and least painful death, when it shall be necessary to deprive them of life.* It is a lamentable truth, that the breach of these obligations has ever been attended with impunity here; but if we suppose that such will be the case hereafter, the very foundation of the doctrine of future rewards and punishments is at once swept away.—*La morte est sommeil eternel.* We may as well, at once, adopt the imperfect principle of Diderot, who, in his *Jean le Fataliste*, instructs us, that 'could we take a view of the chain of causes and effects which constitutes the life of an individual, from the first instant of his birth to his last breath, we should be convinced that he has done no one thing but what he was necessarily compelled to do.'"

Mr. Lawrence descants, with just severity, on the *horrid instances of cruelty to animals*, which have obtained the cognizance of our courts of justice, and recommends the interference of the laws. It is some little alleviation to the feelings of the humane, however, to know, that under the encouragement of a patriotic public institution, butchers are now employed in killing after the manner practised by the late Mr. HUNTER (who had frequent occasion to take away the lives of animals in his experiments), namely, by piercing the **MEDULLA OBLONGATA**, or spinal marrow, with an awl, or other sharp-pointed instrument, which is passed between the vertebrae of the neck nearest the head of the animal, and kills *instantaneously*.

**BEAT**, a term used in horsemanship. A horse is said to *beat the dust*, when, at each stroke

or motion, he does not take in ground or way enough with his fore legs. He is more particularly said to *beat the dust terra à terra*, when he does not take in ground enough with his shoulders; making his strokes or motions too short, as if he made them all in one place. *He beats the dust at curvets*, when he does them too precipitately, and too slow. According to GUILLET, *he beats upon a walk*, when he walks too short, and thus makes but little ground, whether it be in straight lines, rounds, or passing.

**BEAT UPON THE HAND.** See CHACK.

**BEATING IN THE FLANKS**, a complaint in horses and horned cattle, vaguely described by old writers on farriery. The term appears to be understood of an abscess, attended with some little pulsation in the loins. Horses are also said to *beat*, or work, *in the flanks*, when beginning to be broken-winded. See BROKEN-WIND.

**BEDDING**, in respect of horses and other cattle, denotes straw or litter spread under them to lie on.

**BEE, APIS**, in zoology, a genus of insects belonging to the order of *insecta hymenoptera*. The mouth is furnished with two jaws, and a proboscis infolded in a double sheath; the wings are four in number, the two foremost covering those behind when at rest: in the anus or tail of the females, or working-bees, there is a hidden sting. These insects are distinguished into several species, each of which has its peculiar genius, talent, manners, and disposition. Variety prevails in the order of their architecture, and in the nature of their materials. Some live in society, and share the toils; such are the common bee and the drone. Others dwell and work in solitude, building the cradles of their families; as the leaf-cutter bee does with the rose-tree leaf; the upholsterer with the gaudy tapcstry of the corn-rose; the mason-bee with a plaster; the wood-piercer with saw-dust. All are employed in their little hermitage, with the care of providing for the wants of their posterity.

The species enumerated by Linnæus are no fewer than 55; of which the following are the most remarkable. 1. The floriformis, or black bee with a cylindrical incurvated belly, having two toothed-like protuberances at the anus, and a kind of prickles on the hind-legs. This bee sleeps in flowers. 2. The dentata, or shining green bee, with black wings, and a kind of teeth on the hind thighs. The tongue of this bee is almost as long as its body. 3. The variegata; the breast and belly are variegated with white and black spots; the legs are of an iron colour.

It is a native of Europe. This species sleeps in the geranium phæim, or spotted crane's-bill. 4. The rostrata is distinguished by the upper-lip being inflected and of a conical shape, and by the belly being invested with blueish belts. They build their nests in high sandy grounds, and there is but one young in each nest. 5. The ferruginea, or smooth black bee, with the feelers, mouth, belly, and feet, of an iron colour. This is a small bee, and supposed to be of an intermediate kind between the bee and wasp. It is a native of Europe. 6. The cariosa is a yellowish hairy bee; and the feet and front are of a bright yellow colour. It builds in the rotten trees of Europe. 7. The brasilianorum, or pale-red hairy bee, with the basis of the thighs black. This is a very large bee, every-where covered with a testaceous skin. It is a native of America. 8. The lapidaria, or red hairy bee, with a yellow anus, builds in holes of rocks. 9. The terrestris is black and hairy, with a white belt round the breast, and a white anus: it builds its nest very deep in the earth. 10. The violacea is a red bee, and very hairy, with blueish wings. It is a native of Europe. The violacea is said to perforate trees, and hollow them out in a longitudinal direction; they begin to build their cells at the bottom of these holes, and deposit an egg in each cell, which is composed of the farina of plants and honey or a kind of gluten. 11. The muscosum, or yellow hairy bee with a white belly, builds in mossy grounds. The skill displayed by these builders is admirable. In order to enjoy the pleasure of seeing their operations, let a nest be taken to pieces, and the moss conveyed to a distance. The bees will be seen to form themselves into a chain, from their nest to the place where the moss has been laid. The foremost lays hold of some with her teeth, clears it bit by bit with her feet (which circumstance has also gotten them the name of carding bees), then, by the help of her feet, she drives the unravelled moss under her belly; the second, in like manner, pushes it on to the third. Thus there is formed an uninterrupted chain of moss, which is wrought and interwoven with the greatest dexterity by those that abide by the nest; and to the end their nest may not be the sport of the winds, and may shelter them from rain, they throw an arch over it, which they compose with a kind of wax, tenacious, yet thin in substance, which is neither the unwrought bees-wax nor the real wax; though dissolved in oil of turpentine, it may be used in taking off impressions. 12. The centuncularis, leaf-cutter, or black bee, having its belly covered with yellow down. The nests of this species are made



of leaves curiously plaited in the form of a mat or quilt. There are several varieties of the leaf-cutting bees, all equally industrious. They dig into the ground, and build their nests, of which some have the form and size of thimbles inserted one within another, others the shape and size of goose-quills. These nests are composed of pieces of leaves; and each sort of bee cuts its own materials; some the rose-tree leaf, others the horse-chestnut. A careful observer may discover rose-tree leaves cut as it were with a pinkening-iron; and there he may procure himself the pleasure of seeing with what dexterity a bee, destitute of any mathematical instrument, cuts out a circular piece, fit to be either the bottom or the lid of one of those nests; others it cuts out into ovals and semi-ovals, which form the sides of the nests, into each of which it deposits one egg with ready prepared victuals. 13. The mellifica, or domestic honey-bee.

It is observed generally after mild winters, that bees are very prolific, and that the swarms are in general large. Of all the subjects that occupy the rural economist, there are none so profitable as the bee, or that pay so large interest; for if you give the swarm a hive, which cost six-pence, and two-pennyworth of honey to attach them to it, it is more than probable, that in the space of three months, that hive may be worth from five to fifteen shillings.

The bee seems much neglected in Scotland; for while in many parts of England cottagers will take from six to eighteen or twenty-four hives in a year, and leave as many for store, there it is as rare to see a cottager possessed of five hives at once.

It is asserted by some persons fond and successful in the care of bees, that if we universally carried that point to the high degree of produce we might, we should need little importation of sugar; and that one-fourth of the candles we burn might be made of wax. It is said that in many provinces of France, individuals possess from twenty to one hundred hives, and some from four to five hundred.

BEER. See ALE.

BEER, MEDICATED. Malt liquors are said to be medicated when drugs have been infused in them for a proper length of time, and the clear tincture poured off or separated by filtration. An instance occurs in Mr. John Lawrence's CHALYBEATE BEER, spoken of under APETITE. See also the article DRENCH.

BEGUE, an obsolete name for the natural mark in a horse's mouth by which his age may be known.

BELLADONNA (from *bella donna*, handsome

*lady*—Italian). It is so called because the ladies of Italy are said to use it as a cosmetic. See SOLANUM LETHALE.

BELLY. By the belly, in the anatomy of a horse, is to be understood all that cavity which is below the diaphragm or midriff, and is encompassed by the short-ribs, the point of the breast-bone, loins, haunch bones, &c. and is filled with the intestines. See ABDOMEN. The proper teguments of the belly are the muscles, and the membrane which lies under them, called the peritoneum.

The diseases of the lower belly are the colic and gripes, the worms, a lax and scouring, a diarrhoea, costiveness, the jaundice, and ruptures or burstenness. See those articles.

Feeding horses wholly with grafs, or with much hay, and few oats, makes them grow cow-bellied. It is a maxim that horses which are light bellied are weak. The belly of a horse should be of an ordinary size; except draught-horses, where the larger this part is the better, provided it be round and well inclosed within the ribs; rather extending upon the sides than downwards. Those horses are apt to be cow-bellied which have straight ribs, and are great feeders. According to GUILLET, a horse is thick bellied, well bodied or flanked, when he has large, long and well-made ribs; neither too narrow nor too flat. A horse again is said to have no belly or body, or to be thin flanked, when his ribs are too narrow or short, and the flank turns up, so that his body looks flankless like a greyhound. Such horses are called by the French *estracs*; and generally prove fine and tender, not fit for travelling or fatigue, unless they feed very heartily. Coach horses are rejected when they are not well bellied or well bodied, but narrow or thin gutted. But a hunter is not the worse liked for being light bellied. Such as have painful scratches in their hind legs are found to lose their bellies extremely.

BENZOINUM (from the Arabic term *ben-zoab*); called also *assa dulcis*, *assa odorata*, *belzoe*, *benzoinum*, *benivi arbor*, *benivifera*, *benjui*, *benzonifera*, *benzoin*, *benjoinum*, *liquor syrenaicus vel cyreniacus*, *balzoinum*, *benjoinum*, GUM BENJAMIN. It is a concrete resinous juice, obtained from a middle-sized tree, with leaves like the bay-leaves, but not ribbed, and falling off in winter, bearing flattish nuts, the size of nutmegs, whose fleshy covering is externally rough and hairy. It is a native of the East Indies and of North America, particularly of Virginia and Carolina; also of *Sumatra*, but it is only brought from the East Indies. It grows in open ground with vi-

gour in England. Mr. DRYANDER has fully ascertained this tree to be a *styrax*; hence it is called *styrax benzoin*. The Class DECANDRIA; Ord. MONOGYNIA. LINNÆI Gen. Plant. 595. It is the *STYRAX FOLIIS oblongatis acuminatis subtus tomentosis, racemis compositis longitudine foliorum*, DRYANDER; though in the last edition of the Edinburgh Dispensatory, it is considered as the *TERMINALIA BENZOIN, foliis lanceolatis*, LINNÆI; and by CURTIS, the *CROTON BENZOE*. The leaves and the bark smell like the gum; and to rectified spirit of wine they give out a resin, like the *Benjamin*; but no resin naturally flows from it; the resin is obtained by incisions made in its trunk, about the origin of the first branches; as it runs out, it is white, but soon becomes yellowish, reddish, or brownish. It is brought into Europe in brittle masses, composed partly of white, and partly of yellowish or light brown pieces. The white pieces are called *benzoes amygdaloides*, and are reckoned the best; they are hard, solid, shining, transparent, and possess a very fragrant smell: this gum-resin hath but little taste, impressing the palate with a slight sweetness; its smell is very fragrant if rubbed or heated, and is less stimulating than most of the other balsams.

If pure, it totally dissolves in rectified spirit of wine. By digestion it imparts to water much of its fragrance and pungency: the filtered liquor, gently exhaled, leaves a crystalline matter of a seemingly saline nature, amounting to an eighth part of the whole.

#### I. FLORES BENZOINI. FLOWERS of BENJAMIN.

They partake of the fragrance of the resin; dissolve in spirit of wine, and, with the assistance of heat, in water also, from which they are prevented from separating, if as much sugar is added as will give the consistence of syrup to the water.

The College of Physicians of London, in their Pharmacopœia, order the flowers of *Benjamin*, under the title of FLORES BENZOES, *Flowers of Benjamin*, to be thus raised.

Take powder of *Benjamin*, one pound; put it into an earthen pot placed in sand; and with a slow fire sublime the flowers into a paper cone, fitted to the pot. If the flowers should be of a yellow colour, mix them with white clay, and re-sublime them: only a small portion should be put in at a time, and the heat be very gentle. Ph. Lond. 1738.

2. TINCTURA BENZOES COMPOSITA. Compound Tincture of Benjamin, formerly Commendatorium Balsamum, Gutta Vita; Persicum Balsa-

num; BALSAMUM TRAUMATICUM, in the following form.

Take of Benjamin, three ounces;  
Storax strained, two ounces;  
Balsam of Tolu, one ounce;  
Socotorine aloes, half an ounce;  
Rectified spirit of wine two pints:  
Digest with a gentle heat for three days, and strain.

#### 3. OLEUM BENZOINI. OIL of BENJAMIN.

If the powdered *Benjamin* is exposed to a gentle heat in a retort, it melts and sends up the flowers; after which a thin oil rises, which is yellowish, slightly empyreumatic, and mixed with an acidulous liquor called the spirit of *Benjamin*; then follows a thick butyraceous matter. The thin oil re-distilled with water loses its taint, and now smells agreeably to the *Benjamin*, and seems to be of the same nature as essential oils; and yet the *Benjamin* itself, when distilled in water, yields no essential oil.

There are other preparations of this gum, but they do not appear calculated to answer the purpose of veterinary remedies.

Gum *Benjamin* approaches, in virtues, to the storax and balsam Tolu. The flowers are manifestly a saline substance of the acid kind, of considerable acrimony, and stimulant power.

BETONICA, corrupted from *vetonica*, and so called because the Vetones, a people of Lusitania, first used it; or perhaps from *betwen*, Welsh. Called also *vetonica cordi, cestrum droshobetanen*, COMMON or WOODY BETONY. The *BETONICA OFFICINALIS*, Linn.

It is a low plant, with dark green, oblong, wrinkled leaves, that are crenated, hairy, and set in pairs, on square unbranched stalks; bearing thick spikes of labiated purplish flowers, each of which is followed by four oblong triangular seeds, inclosed in the flower-cup. It grows wild in woody and shady places; flowers in June and July; in winter it dies to the ground, the roots continuing.

The leaves and tops are agreeably scented, but it soon flies off from the dry herb: to the taste they are warm, rough, and bitterish; if powdered, they make a good errhine.

An infusion of the leaves in boiling-water contains all the virtue of the herb, and is the best preparation of it. From large quantities a small portion of essential oil is obtained by distillation. The roots are said to be a medicine very similar to the white hellebore.

BEZOAR MINERAL, a medicine once in high repute, and which is thus prepared: Drop butter of antimony into three times its weight of



the spirit of nitre, and distil them in a retort. At first the marine acid arises with a little of the nitrous spirit, and this is the *spiritus nitri bezo-articus*. The distillation is to be continued until a dry white mass remains, which must be calcined in a crucible, in a naked fire, heated to an almost white heat, and so kept for half an hour.

Mr. JOHN Lawrence prescribes this mineral for horses affected with the farcy, in the following way :

Take butter of antimony,

Bezoar mineral, of each one ounce :

Mix and beat them up with half a pound of coral ball.

Dose, the size of a walnut, on an empty stomach, the horse fasting three hours after, every day for three weeks, and using moderate walking exercise.

**BICEPS MUSCULUS** (from *bis*, and *caput*), a double-headed muscle, of which there are the *biceps flexor, extensor*; the *biceps brachii, cubiti*, &c. For an instance of this muscle in the horse, see *ANATOMY of the HORSE*; description of Pl. II. muscles, &c. “*In the right lower and upper limbs.*” See also 9, 9, 11, Pl. III. and other plates of the horse described under **MUSCLES**, &c.

**BICORNIS** (from *bis*, double, and *cornu*, horned). A muscle is so called when it hath two terminations; also a name of the *flexor carpi radialis*, and of the *extensor carpi radialis*.

**BICUSPIDES** (from *bis*, twice, and *cuspis*, a point). Double pointed. See **MOLARES**.

**BIENNIALIS** (from *bis*, twice, and *annus*, a year). **BIENNIAL**. Herbs are said to be *biennial* when their roots continue two years.

**BIFARIUS** (from *bis*, twice, and *fari*, to speak). In botany it is used for leaves which point two ways.

**BIFIDUS** (from *bis*, twice, and *findo*, to cleave). **BIFID**, cloven or divided into two parts; called also *Dicraus*.

**BIFOLIUM** (from *bis*, twice, and *folium*, a leaf); so called because it sends up two leaves on one stalk; also called *ophris*, *ophris major*, *orchis bifolia*, *didyme*; ordinary **WOOD BIFOL**, AND **COMMON TWAY-BLADE**.

The root is slender, but much branched; it sends up one stalk with two leaves from its sides, that are large, oval, and full of fibres; the flowers grow on spikes at the top; they are roundish, and of a dull green colour. It is found in woods and other shady places, and flowers in June; and ranks among the agglutinant atringents. Miller's Bot. Off.

**BIGASTER** (from *bis*, twice, and *γαστήρ*,

belly). A name given to those muscles that have two bellies.

**BIGEMINUS** (from *bis*, twice, and *geminus*, double). In botany a stalk is so called, which is divided, and bears two leaves upon each division.

**BILIS** (from *φάωλος*, *succus*, juice, and *fel*), **BILE**, or **GALL**; a bitter viscid juice, secreted from the blood in the liver, and, in the human subject, collected in the receptacle known by the name of gall-bladder. The latter, however, is wanting in the horse, and some other quadrupeds. In that animal, the blood collected from the adjacent abdominal viscera is thrown into the vena portæ in the liver, which, ramifying through this viscus, carries the blood, charged with biliary matter, fit to be secreted, to its ultimate branches, from which the *bile* is emptied into the beginnings of the biliary ducts, called *pori*, or more properly *tubæ biliaræ*, and by them is conveyed into the ductus hepaticus; whence the *bile* is discharged gradually into the duodenum.

The *bile* is formed from the blood in the secretory vessels of the liver, and in the more perfect animals bears a general resemblance to that secretion in the human subject. Thus it is a compound of mucilage and water, of a yellow colour, varying to green; it has a bitter taste, with something like sweetness; the mucilage is decomposed, not coagulated, by acids, and some of their compounds; the acids precipitating a part which is resinous. It is soluble in alcohol, but incompletely. It has a peculiar smell of the species of animal in which it is produced, and is a pretty powerful anti-putrescent. Dr. Saunders, from some experiments which he made on human *bile*, draws the following conclusions respecting the elements forming the *bile*, and says it consists, 1st, Of water impregnated with the odorous principle. 2dly, A mucilaginous substance, resembling the albumen ovi. 3dly, A resinous substance, containing the colouring principle and bitter taste. 4thly, A mild mineral alkali. With respect to their combination, it seems that the saponaceous matter consists of the bitter resin in union with the alkali; this admits of a ready union with a mucilage, and with this again the aqueous matter very easily combines, so that the whole forms an apparently homogeneous mass. It is the least putrescent of any juice in the body; its use is to mix with the chyle, and assist the peristaltic motion of the intestines.

This saponaceous juice resists acidity, and corrects it in the bowels; it easily mixes with water; renders oily, mucous, and viscid bodies, miscible also with that fluid; and if rubbed with

resinous gums, attenuates them. In short, there is scarce an animal or vegetable substance that it will not dissolve. The gall of small animals is stronger and more subtle than that of the larger kinds, whether on land or in the water; and, of land animals, that of the hawk and serpent, of water, that of the pike and eel, is the most active.

A defect of *bile* in animals must dispose the body to various diseases. When it offends by its acrimony, it produces too frequent and copious discharges by stool, the cure for which consists in the use of EVACUANTS.

**BINATUS** (from *binus*, double). In botany it means leaves which point two ways.

**BINDERS.** See **BARs**.

**BIPETALOUS** (from *bis*, twice, and *petalum*, a petal). In botany it means having two petals or flower-leaves.

**BIPINNATUS** (from *bis*, twice, and *pinna*, a wing), doubly winged. In botany it is applied to a stalk pinnated by stalks, which are themselves pinnated by leaves.

**BIRTHWORT.** See **ARISTOLOCHIA**.

**BISHOPPING**, an operation performed on the mouths of horses, &c. by dealers, with a view of passing them off for young animals when the natural marks are obliterated.

After describing accurately, in his elegant work on the structure and economy of the horse, the usual signs by which the age of that animal may be ascertained (see *AGE of a HORSE*), Mr. Richard Lawrence says,

“ In the ox the transverse ridges forming the roof of the mouth, are papillous, the points taking a direction upwards, in which manner they correspond with the direction of those in the tongue.

“ The insides of the cheeks of the ox are also furnished with a papillæ of a pyramidal form, pointing upwards towards the throat, the office of which is probably to hold the cud in its proper situation while the animal chews it.

“ These ridges are large and distinct in a young horse, but become flatter and more level as the animal advances in years, and in very old horses they are nearly absorbed. The front teeth or incisives of both jaws, in a young horse, meet exactly in a line, and perpendicularly to each other. As the horse grows older, these teeth take a more horizontal direction, nearly in a line with the jaws, the upper teeth projecting very considerably over the lower teeth; at the same time the upper corner tooth forms a curve over the lower corner tooth. Furrows appear on their front surfaces, and their colour becomes yellow and opaque. Other characteristics of

age may be seen externally, for instance, the eyes sink in their orbits, the eye-lids become lean and wrinkled, and the cavity above the eye appears more hollow (this cavity, however, is sometimes deep in a young horse). Grey hairs shoot out upon the forehead and the lower part of the mouth, the middle of the nose becomes indented by the long continued pressure of the nose-band of the head-collar, and the lips exhibit a lean and shrivelled appearance, the lower lip hanging considerably below the upper lip. The ears also drop more or less in a lateral direction. These external marks of old age, together with those of the teeth, the dealer in horses exerts his ingenuity to counteract.

“ He therefore commences his operations by making an opening between the skin and cellular membrane, at a small distance above the eye, into which he introduces a quill, and by blowing into it, fills up the cavity and gives it a plump appearance. He proceeds next to furnish the corner teeth with the same marks which they possessed at seven years old. For this purpose, he forms an artificial cavity in the head of the tooth with an engraving tool, and gives it a black colour by burning it with a hot iron. This process, in the stable vocabulary, is called *bishopping*. By such practices as these, an inexperienced person may be deceived; but by attending to the following observations, the imposition may be easily detected; for although the dealer has it in his power to make marks or cavities in the corner teeth, yet he cannot alter their horizontal direction, nor restore them to the perpendicular approximation which is the attendant of youth. Neither can he re-produce the prominence of the ridges of the roof of the mouth, nor furnish the tusches with their original concave surfaces. As it suits the purpose of the dealer to make an old horse appear younger, so does he sometimes find it convenient to make a young horse appear older. A horse is more saleable at five years old than at four, on which account the dealer attempts to produce an additional year, by drawing the corner teeth before the natural period of their dropping out. The bars of the mouth are also cut, to let the tusches protrude prematurely. But although the corner teeth are removed, and the protrusion of the new teeth is thereby somewhat accelerated, yet it is an unerring rule, that the animal has not attained his fifth year until the corner teeth, both of the upper and lower jaw, are complete in their size and appearance, and the marks of the middle teeth begin to fill up. The tusches also should rise considerably above the jaw.

“ It is difficult to discover with accuracy the



age of CRIB-BITERS, and horses whose teeth are extremely hard; the former lose the marks of their teeth before their usual period, the latter retain them long after the age of seven years. In examining a horse's mouth, it is necessary to look at both sides of it, as a considerable difference in the appearance frequently occurs from the mastication of the food being performed on one side of the mouth only, in which case the teeth on that side of the jaw which has most friction, will be most forward in their alteration."

**BISLINGUA** (from *bis*, twice, and *lingua*, a tongue); so called from its appearance of being double tongued; or of having upon each leaf a less leaf.

**BISMUTH**, a semi-metal of a shining yellowish white, but which, upon being exposed to the air, acquires a reddish tinge. It is disposed in plates, or layers, is harder than lead, but easily broken, and reduced to powder. The broken pieces exhibit large shining facets in a variety of positions. Thin pieces of this semi-metal are in some degree sonorous,

This semi-metal is the most easily fused of any after tin. It is found combined with various substances in the bowels of the earth.

When heated to redness it burns with a blue flame, scarcely perceptible; and its oxide rises in the form of a yellowish fume, which, when condensed, forms the *flowers of bismuth*. In passing to the state of an oxide, its weight is considerably increased. Bismuth has been converted into a glass of a dull violet colour, by Mr. Darcet. It may also be substituted instead of lead, in the process of cupellation, as its vitrification is even more speedy than that substance.

If the sulphuric acid be boiled on bismuth, sulphureous acid escapes, and the semi-metal is partly dissolved, but the sulphate of bismuth does not crystallize, but is very deliquescent. The nitric acid attacks bismuth, and is very speedily decomposed. Nitrous gas is disengaged, while the oxygen is fixed in combination with the metal. There is nevertheless a portion dissolved which is capable of forming a salt in rhomboidal, tetrahedral prisms, terminating in a tetrahedral pyramid with unequal facets. This nitre detonates weakly with reddish scintillations; and melts, swells up, and leaves an oxide of a greenish yellow colour behind. In the air this salt loses its transparency, and its water of crystallization is at the same time dissipated.

Bismuth is not acted upon by the muriatic acid, except it be exposed to it for a considerable time, and the acid be highly concentrated. The muriate of bismuth is of difficult crystal-

lization, and attracts the humidity of the air strongly. Water precipitates this semi-metal from all its solutions; and the precipitate, when well washed, is known by the name of *Magistery of Bismuth*, which is used as a pigment for the skin: the strong sulphureous vapours, and even the animal transpiration, convert it into metal, and alter its colours. A pomatum made with the magistery of bismuth is employed by the hair-dressers, for converting hair to a black colour. This substance is also used by the pewterers to give hardness to the metallic composition of pewter. The various solutions of the *white oxide of bismuth* form sympathetic inks, which are more or less curious, in proportion to the facility with which this oxide is altered and rendered black. This metallic substance unites with all the metals; but very difficultly, in the way of fusion, with the other semi-metals, or the metallic oxides; and antimony, zinc, cobalt, and arsenic, entirely reject an union with it. When fused with gold it renders it *eager*, and communicates to it its own colour. Silver is not rendered so brittle as gold by it; the red colour of copper is lessened by it, but it is deprived of its own colour by uniting with lead; the two metals, in this case, forming an alloy of a dark grey colour. Bismuth mixed in a small proportion with tin, gives it a greater degree of brilliancy and hardness. By a violent degree of heat it can be united with iron. This semi-metal amalgamates with mercury, and forms a fluid alloy; a circumstance which has induced some unprincipled drug merchants to mix it with that metal. The fraud may be known, from the mercury being less fluid than before, and no other test is necessary than to dissolve the mixture in spirit of nitre; as the bismuth will be precipitated by the addition of water. The property of completely amalgamating with mercury may however cause it to be applied with advantage in some of the arts, as in silvering of glasses, &c. This may be done by an amalgam of tin, bismuth, and mercury. On this account it has probably obtained the name of tin-glass. Mr. Darcet has formed a fusible alloy; which consists of eight parts of bismuth, five of lead, and three of tin. It flows like mercury, and dissolves in water at the seventy-third degree of Reaumur, or the one hundred and ninety-seventh of Fahrenheit.

**BISTORT** (quasi *bis torta*; twice twisted, or wreathed), so called from the contention of its roots. Called also the GREATER BISTORT, or SNAKEWEED; *colubrina*, *beadiramon*. It is the **POLYGONUM BISTORTA**, or **POLYGONUM caule simplicissimo monostachyo, foliis ovatis in petiolum decur-**

*ventibus.* Cl. OCTANDRIA. Ord. TRIGYNIA.  
LINN. G. Plant. 495.

It is a plant with oval, pointed, wrinkled leaves, of a dark green colour above, and blueish underneath, standing on long pedicles, and continued a little way down the pedicles, forming a narrow margin on each side. Among these arise round, slender, jointed, unbranched stalks, furnished with smaller and narrower leaves, which have no pedicles, bearing on the top spikes of imperfect five-leaved red flowers, which are followed by triangular leaves. It is perennial, a native of Britain, grows wild in moist meadows, about Battersea, and by the side of Bishop's Wood, near Hampstead, and flowers in May and June.

The root is bent vermicularly, whence its name, and jointed at each bending. It is commonly about the thickness of a finger, surrounded with bushy fibres, of a blackish brown colour on the outside, and reddish within. It is distinguished from the other *bisfort* roots by being less bent; that of the officinal species having only one or two bendings, and those of the other three or more.

This root is powerfully astringent, antiseptic, and diaphoretic. Water totally dissolves its astringent matter. Extracts made with water, or with spirit, retain all the styptic qualities. All the parts of this plant possess the same qualities as the root, but in a less degree. Dr. Cullen says it seems to be one of the strongest of our vegetable astringents, and justly commended for every virtue that has been ascribed to any other. Cullen's *Mat. Medica*.

The effects of this remedy in veterinary practice have not been ascertained; but it is an ingredient in some of the compositions of the farriers of the old school, and retained in Gibson's Farrier's Dispensatory.

BITE, a kind of wound commonly inflicted by one animal on another. This separation of the fleshy parts is, in general, to be considered and treated as a lacerated wound; since the teeth, though more or less capable of *incision*, are yet not adapted to produce such a wound as is capable of being united by the *first intention*. The proper treatment consists in approximating the sides of the wound, and confining them moderately with ADHESIVE PLASTER, or by a BANDAGE, or both together (but by no means by LIGATURE), till the sore begins to discharge; after which it should be dressed daily with any simple ointment spread on tow.

If the bite received be that of a *venomous reptile*, as the VIFER, or if it has been received

from a *mad* animal, the wound must be well washed to remove the poison, and then treated as above.

See the directions respecting lacerated and other wounds under the article WOUNDS.

Mr. John Lawrence has the following remarks on VENOMOUS BITES. "I have often seen," says he, "the *shrew* or *shrove-mice* of the old farriers, in different counties. They have snouts like the hog, and their bite is venomous. Cats will kill, but not eat them.

"In punctures from the stings of hornets or wasps, or wounds by the tusks of a boar, which last are apt to swell as if venom had been really infused, wash clean with warm soap-suds, and anoint them well several times a-day with warm salad oil. Use emollient poultices, and fomentations, prepared with rue, wormwood, bay-leaves, rag-weed, and wood-ashes. Heal them with Ægyptiacum and brandy mixed; and give saline physic, or nitrated water, if feverish symptoms supervene; or the internals hereafter recommended.

"The bite of a viper is of far worse consequence; not only the wounded part, but sometimes the whole body will be considerably swelled. Make a tight bandage above the wound, if upon a limb: enlarge the wound with a small sharp pointed cautery, avoiding the tendons, and keep it open as long as the venomous symptoms remain, with a sponge smeared with precipitate ointment, or orrice root prepared with Spanish flies. Rub in warm oil mixed with viper's fat, both to the wound and the swelled parts. Wash with, strong vinegar, one pint; mustard-seed, two ounces. Mix, stop them close a few hours, and strain. Dress with warm Ægyptiacum, once or twice a-day. In some cases bleeding is required. The following drink every night may be given for a week.

Take Venice treacle, one ounce;  
Salt of hartshorn, one drachm;  
Cinnabar of antimony, half an ounce;  
Sweet oil, three ounces.

This is ordered to be given in warm ale.

Drinks of wormwood, rue, and scordium, are also proposed, and scraped tin, but on what principle is not stated.

"On that most dreadful of all maladies, CANINE MADNESS, no new discoveries have been made, excepting that the *hydrophobia*, or dread of water, is not a peculiar consequence, or symptom of the rabid poison, although its general attendant; but merely sympathetic affection from a pained tendon, analogous to the *tetanus*, or locked-jaw. Hydrophobia has been



known to attend hysteric cases, and painful wounds in the tendons, and to precede the locked-jaw in the human subject.

"In the bite of a mad dog (for in that animal the contagious rabid poison seems to originate, or of any animal which being bitten acquires the power of propagating the poison), the only remedies entitled to any rational dependence, are instant execution, or cutting away the bitten part, ustion or burning, and mercurials. The Ormskirk Medicine, Dr. Mead's remedy, bathing in salt water, and many other pretended specifics, have all failed; and as I should conceive, never had any real title to do otherwise. That Dr. Mead should recommend liver-wort and pepper, as articles of sufficient efficacy to be a specific cure in a disease of such dreadful and potent malignancy, would be truly astonishing, did we not know that the greatest men are sometimes guilty of the greatest absurdities. Besides burning the wound, where practicable, a circle ought to be drawn round it with a cautery. Rub the part with strong mercurial ointment and turpentine as often as possible, without raising a salivation. Turbith mineral (*vitriolated quicksilver*) has succeeded in the cure of dogs, of course it ought to be tried with horses, and also with human patients. Bartlet advises turbith mineral and camphor equal quantities. Before or after the turbith course, the horse should be frequently plunged in cold water.

"The diagnostics of canine madness are, hunger and thirst, without power to eat or drink, trembling, eyes fierce and flaming, hanging of the ears and tail which is bent inwards, lolling of the tongue, foaming, barking of the dog at his own shadow, panting, running a straight and heedless course against any thing in his way, biting with violence; other dogs fly him by instinct."

Mr. TAPLIN speaks of the jaundice and affection of the liver in horses, as sometimes occasioned by the bites of venomous insects or animals. "Whether such inflammation or bilious appearance," says he, "is produced by the bite or not, if there are other local symptoms, as swelling, pain, and inflammation, bleeding becomes immediately proper; then let the part be well washed with soap and warm water, so as to raise a substantial lather; wipe dry with a cloth, and bathe the surrounding parts for some minutes with equal portions of fine olive oil and white-wine vinegar: afterwards apply a poultice of emollient ingredients, and let it be repeated twice a-day till the swelling or symptoms subside. Should the horse be attacked with a

violent symptomatic fever to a great degree, adopt the methods recommended in such cases; at any rate give one ounce of *nitre* twice a-day in his water, and assist in cooling the body by *masses* to relax, prepared with *malt* and *bran* equal parts, or *oats*, *bran*, and a few ounces of *honey*."

Some of the latest writers on this subject have erroneously attributed *venomous* effects to the bites of some creatures, not supposed, by naturalists, to be capable of infusing *poison* into the wounds they inflict; nor, in fact, furnished with any natural apparatus for that purpose. Of these we may instance the *slow-worm* and the *est*.

**BITERNATE** (from *bis*, *twice*, and *ternus*, *three-fold*). In botany it means having three divisions and three subdivisions.

**BITT**; the iron which is attached to the bridle, and put into a horse's mouth. It has also been called a **BITT-MOUTH**. In the middle there is always an arched space, for the reception of the tongue; which is called the *liberty*. As little iron as possible should be put into a horse's mouth; and we therefore seldom use any other than snaffles, cannon mouths jointed in the middle, a cannon with a fast-mouth, and cannon with a port-mouth, either round or jointed.

Of the bitts in use, besides the snaffle, or small watering bitt, there is the cannon-mouth jointed in the middle, which always preserves a horse's mouth; and though the tongue sustain the whole effort of it, yet it is not so sensible as the bars; which are so delicate, that they feel its pressure even through the tongue, and thereby the least motion of the rider's hand is perceived.

The larger the bitt is towards the ends which are fixed to the branches, the gentler it will be. We should make use of this kind to a horse as long as we can; that is, if with a simple cannon-mouth we can obtain from a horse all the obedience he is capable of, it will be useless to employ any other.

The *cannon* with a *fast-mouth* is all of one piece, and only kneed in the middle, to give the tongue freedom. It is proper to secure those mouths that chack or beat upon the hands, and this will fix them, because it rests always in one place; so that the horse loses his apprehensiveness, and will soon relish this bitt-mouth better than the last, which being jointed in the middle, rests unequally upon the bars. This, however, because not jointed in the middle, is more rude. The middle of this bitt should be a little forward, to give more play to the horse's tongue;

and the bitt should rest rather on the gums, or outside of the bars, than upon their very ridges.

The fourth sort is called the *cannon-mouth with the liberty*; after the form of a pigeon's neck. When a horse's mouth is too large, so that the thickness of it supports the mouth of the bitt, that it cannot act up on the bars, this liberty will a little disengage it, and suffer the mouth of the bitt to come at, and rest upon, his gums; which will make him so much the lighter upon the hand.

The *port-mouth* is a cannon, with an upset or mountain liberty. It is proper for a horse with a good mouth, but a large tongue, working its effects upon the lips and gums: and, because the tongue is disengaged, it will control a horse that has high bars, and which are in some degree sensible. This useful bitt, if well made, will never do harm in any case.

The *scratch-mouth*, with an upset or mountain liberty, is ruder than a cannon-mouth, because not quite so round, but more edged; and it is preferable to that in one respect, namely, that those parts of a cannon-mouth to which the branches are fastened, if not well rivetted, are subject to slip; but the ends of a scratch-mouth can never fail, because of their being overlapped; and therefore much more secure for vicious and ungovernable horses.

PIGNATEL'S *cannon-mouth* with the liberty, is proper for a horse with a large tongue and round bars, as being only supported a little by his lips. Care should be taken never to work a horse with a single rein, as long as he has one of these bitt-mouths. This bitt has a gentle falling and moving up and down; and the liberty being placed so low as not to hurt the mouth, it is certainly the best bitt for horses that have tongues of a large size.

Some say the best way to fit a horse exactly with a bitt, is to have a great many, and change till they hit on the right one: but at first the horse should have a gentle one, rightly lodged in his mouth, so as not to incommode his lips, nor rest upon his tusches. Let him then be mounted, and pulled two or three steps backward, to try if his head be firm, if he performs frankly, or only obeys with reluctance. If he incline to carry low, it is improper to give a liberty to the tongue, which will rise too high; for that, by tickling his palate, would bring his head down between his legs. Large curbs, if they be round, are always most gentle.

BITTER-APPLE, see COLOCYNTHIS. This drug, though so violent a drastic when applied to the bowels in the human subject, and so long

a favourite remedy with farriers as a most active purge, has been proved, by experiments made at the VETERINARY COLLEGE, under the eye of PROFESSOR COLEMAN, to possess no cathartic properties when administered to the horse. The delusion probably arose, and has been continued, in consequence of the almost uniform practice of giving ALOES along with it, and that in no small proportion. Some of our modern veterinarians have fallen into this error, which shews, first, how important it is, in medicine, to know the properties of the substances we administer, singly, before we give them in combination with others, which may have the effect of changing their operation. Secondly, we may learn from this unexpected fact, not to confide too implicitly in the supposed ANALOGY between the human and brute species.

BITUMEN ( $\pi\iota\tau\omega\mu\alpha$ , from  $\pi\iota\tau\alpha$ , pitch; or  $\pi\lambda\omega\mu\alpha$ , from  $\pi\iota\nu\varsigma$ , a pine, because it flows from the pine tree); called also *asphaltos*, *pisasphaltus*, *asphaltum*, *asphaltum bitumen*, *Judaicum*, *carabe funerum*, *gummi funerum*, *mumia*, CARABE of SODON, FOSSILE PITCH, and JEWS' PITCH.

It is a kind of mineral sulphur; a solid substance, of a dusky colour on the outside, and a deep shining black within, having but little taste or smell, except it is heated, in which case it emits a strong pitchy odour. It is not soluble in oils, nor in vinous spirit; it melts but imperfectly in the fire. On burning it, a large quantity of ashes are left behind. It is found in the earth in many parts of Egypt, and floating on the surface of the Dead Sea. At first it is soft, but grows hard by keeping.

The genuine sort is generally supplied by different bituminous substances found in Germany, France, and other countries; but these substitutes have a stronger pitchy smell than the true sort. They are further distinguished from the true, by their more perfectly dissolving with heat, and by their not leaving so many ashes behind when burnt. Neuman says, that when the genuine *bitumen* is distilled in a retort, it yields a light insipid phlegm, about 1-11th its weight of an oil, that resembles the native petrolea, but of a more disagreeable and empyreumatic smell; hence any of the above substitutes may well be admitted. *Fossile pitch* is found in many parts of this island, in the seams of lime-stone. The virtues of all these substances, when applied to veterinary purposes, depend on the quantity of petroleum which they contain. See PETROLEUM and AMBER.

BITUMEN LIQUIDUM. See PETROLEUM.

BIVALVE (from *bis*, twice, and *valva*, door),



in botany, denotes the pods and husks of plants which open lengthways in two parts, like the shell of a muscle.

**BIVENTER.** Thus muscles are named that have two bellies, from *bis* and *venter*; also *Idi-gastricus*. The muscle particularly called *biventer* arises from the processus mastoideus. Its tendon frequently joins the stylo-hyoidæus, and the membranous ring fixed to the os hyoidæus, and is then attached to the inner part of the chin. It depresses the jaw, and so opens the mouth. It is fleshy at both its extremities, and tendinous in the middle. The middle tendon passing through the aponeurotic ligament at the lateral part, and the root of the cornua of the os hyoides, is what renders it capable of performing its office.

**BLACK,** or **COAL-BLACK,** is the colour of a horse that is of a deep, shining, and lively jet. By jockeys, horses entirely black, are accounted dull, but those with a white foot or white spots in the forehead, more alert and sprightly. See **COLOUR.**

Horned cattle of this colour are said to be liable to a distemper peculiar to themselves, but the accounts of it are vaguely related. See **BLEND-WATER.**

**GIBSON** says, this colour in horses is esteemed very beautiful, especially when they are of a jet shining black, and well marked, without having too much white: for a great deal of white, especially when it spreads round the eyes, and a great way up the legs, adds nothing to their beauty or their goodness. The English black horses have more white about them than the black horses of any other country. The Spanish, Arabian, Dutch, and Danish horses, seldom have much; though a star or blaze, and sometimes a white muzzle, and one or more of the feet tipped with white, always looks beautiful and lively, and is so far from being a diminution of the goodness of a horse, that most think it an addition, from an opinion that horses without marks are generally stubborn and ill-conditioned. Some black horses have brown muzzles, are brownish on their flanks, and between their hips. These are often called black browns, as they are not a perfect black, but approach near to the colour of a tawny black hound; some are of a lighter colour about their muzzles, and are called mealy-mouthed horses; and of these sort are the pigeon-eyed horses, which have a white circle round their eye-lids, and their fundaments often white. Those that partake most of the brown, are generally the strongest in constitution.

**BLACK-GRASS,** a species of grass in America, of which an account was first given by the

late Dr. **ELLIOT** of New England, and since by his son-in-law, the Rev. Dr. **GALE**, who sent a considerable quantity of the seed to the society for the encouragement of arts, &c. in London.

Its early spring and growth, its lively green, its great produce, the preference given to it by cattle, when distributed promiscuously with salt grass for their food; its rendering the turf of mirey, loose, dirty meadows, firm and solid; and its extraordinary quality when improved for pasture in the spring and summer; raised its reputation in that country, and endeavours were used to propagate it: but it proved very fullen and uncertain in its growth; growing only here and there from the seed promiscuously shed, and wafted about by the tide which overflowed the meadows.

It grows and flourishes well near the banks of rivers, which admit the salt water, and even in flat or low meadows, which are in some measure overflowed every tide by the salt-water: but these low meadows must also be of that kind only, where there is a course of fresh water when the tide is out; so that a mixture of both fresh and salt water seems to be necessary for its prolific vegetation.

It grows largest and best in reedy and rushy coves, or arms of the salt meadows, which are a little higher than the general level of the salt-marsh, which are not commonly overflowed by the flux and reflux of the tides, which lie at some distance from salt creeks or courses of salt water, and which are watered by fresh springs rising from the banks or adjoining uplands.

Dr. Gale says he has often seen such meadows flourishing remarkably with this sort of grass, though but lately brought under culture; and that he is credibly informed, eight acres of such a cove produced thirty-two tons of black grass.

The black grass is not near so much impregnated with salt as the common grass is, when both of them grow together; and the dew which adheres to the black grass is fresh, when that on the salt grass is highly impregnated with salt.

It thrives best on a clay or strong loam. The natural turf should be broken, and the seed, after being mixed with fresh cow-dung, should be spread, and fastened in by treading, that it may not be carried off by the water; or it may be propagated by transplanting the turf taken from a black grass meadow, by which means it will be made to spread apace.

It will however grow where salt water never reaches. Dr. Gale has seen it growing on moist upland, and the turf has been so firm, that it was hard work for six oxen to plough through it.

**BLACK-LEGS**, a name given in Lincolnshire to a disease frequent among calves and sheep, in which there is a puffing up of the skin. It is described as a kind of jelly (perhaps the coagulable lymph of the blood) that settles in the legs and neck, and is said to proceed from too great a degree of moisture in the food, which at length causes the rot.—The cure which the country people practise (without knowing why), is to clip off the wool near the swelled part, and slit the skin about an inch. Then they dip a tent of linen into oil of turpentine, and put it in. This done, they mix an ounce of regulus of antimony in a pint of ale, add a little spice, and some brown sugar, and give a quarter of a pint of it warm every morning.

The real nature of this malady remains to be ascertained; but the probability is that the swelling is anasarcaous.

**BLACK TWITCH**, the *festuca duriuscula* of Linnæus, a noxious plant, which flourishes notwithstanding the extreme dryness of a season; and is very injurious to any crop.

**BLADDER**, *VESICA URINARIA* (dim. of *vas*, a vessel); called also *CYSTIS URINARIA*. In the horse and larger quadrupeds, it is of an oblong form; its fundus lying against the os pubis, and its neck upon the os sacrum and coccygis. The neck is furnished with a sphincter muscle which surrounds it. In the human subject, the fundus is the smallest end; though the bladder of a human foetus is very similar to that of a quadruped. The ureters enter into the bladder, near the vesiculæ feminales. The coats of the bladder are, 1st, A partial one from the peritonæum. 2d, A muscular coat, the greatest part of the external fibres of which are longitudinal, arising from the prostate gland. Under these is a stratum principally circular, under which, on the inside, is a very complex net-work of fibres, running in all directions; by which diversity, and being fixed to the prostate gland, they, in motion, bring all parts towards the gland, for the expulsion of the urine, and to contract the bladder, lying loose when empty. The inner coat is a very thin transparent membrane, of a very dense texture, which prevents the transudation of urine. Many describe another coat, but it is nothing more than the cellular membrane. The ligamentous remains of the urachus upon the fundus of the bladder are never pervious. The ureters have small oblique orifices, and pass obliquely through the coats; which has the effect of valves. The urethra arises from the flat surface of the bladder. The arteries are from the hypogastric or internal iliac, being branches of the arteria scia-

tica, epigastrica, and umbilicalis, on each side. The nerves are from the crurales, and the sympathetici maximi, by means of their communication with the crurales; some branches are from the plexus mesentericus inferior.

Mr. RYDING, in his "Veterinary Pathology," describes the diseases of the bladder with great accuracy.

The bladder of the horse, he says, is subject to *spasm* on its neck, and to *inflammation*; producing different symptoms. A third disease may be added, namely, the *stone*, or **URINARY CALCULUS**.

1. **INFLAMMATION** of the bladder may arise from a defective action of the mucous glands situated between its coats, preventing the mucus from being secreted in sufficient quantity, to afford protection against the irritation of the secreted urine. Or it may arise from calcareous concretions passing from the kidneys, by the ureters, into the bladder, causing violent irritation in their passage.

The symptoms of inflammation from these two causes are much the same, viz. universal coldness of the extremities, frequently attended with cold sweats; pulse quick; the hind legs are extended wide, with a constant attempt to stale, and the urine continually discharged, but in small quantities. This is owing to the kidneys continuing to secrete the urine; and the smallest quantity, acting as extraneous matter, excites the bladder to contract and an endeavour to expel its contents. When this is the case, our intention of cure must be directed to the removing of the inflammation, and giving such medicines as may bring the vessels to their proper action.

The inflammation may be removed by frequent bleeding in full quantities, according to the animal's strength. His drink should be mucilaginous fluids; such as the following:

Take linseed bruised, half a pound;  
Boiling water, two gallons;

Let them stand until nearly cold, and strain the liquor through a coarse cloth; then add, of

Gum-arabic, four ounces, previously dissolved in a quart of boiling water.

Stir the whole well together for use.

A quart of this mixture may be given every four hours, or may be used as his common drink. Large clysters of warm water may be thrown up the rectum with great advantage.

Opium has occasionally been found serviceable in this disease; and, when necessary, may be used in the following manner:



Take of opium in powder, one drachm ;  
 Linseed powder, half an ounce ;  
 Mucilage of gum-arabic sufficient to  
 form a ball.

This may be given every other day ; but if the disease proceeds from calculi, we have but small hopes of effecting a cure. We can only mitigate the symptoms, by a frequent use of the above medicines.

After the symptoms are removed, Mr. Ryding advises a course of the following balls :

Take Cinchona in fine powder, twelve ounces ;  
 Grains of paradise, two ounces ;  
 Gentian in powder, three ounces ;  
 Honey, sufficient to form sixteen balls.

One of these balls may be given every morning.

2. In *spasm of the neck of the bladder*, the symptoms are similar to those of inflammation of the KIDNEYS ; the suppression of urine being only a consequence. This disease most frequently proceeds from a too long retention of urine on a long journey, or too long continued exercise ; the horse not being permitted to stale, his bladder becomes so much distended by the accumulating urine, as to lose its contractile powers. It is easily to be distinguished from inflammation of the kidneys ; by introducing the hand up the rectum so as to examine the state of the bladder, which will be found much distended, and, if not speedily relieved, may become paralytic, and incapable of its usual powers.

In this disease we must abstain from the use of diuretics, and all fluids, as much as possible. Bleeding may be used freely : large and often repeated elysters of warm water will be found very useful : opium, to the amount of two drachms, may be given with advantage. But if the above methods fail, and the disease continue to increase, our last resource must be to puncture the bladder, by the rectum, with a small lancet, which will give immediate relief.

Another, and perhaps more advisable mode of relieving the horse, practised at the VETERINARY COLLEGE, is by an operation calculated to effect the introduction of the CATHETER. A STAFF is to be introduced as far into the urethra as the direction of that canal will admit ; then to be cut down upon, and the catheter introduced through the incision.

With the treatment already described, fomentations are also to be had recourse to, and the loins must be powerfully stimulated, blistered, or even cauterised. Purging is also proper in this disease ; and may be effected with a ball, consisting of half an ounce of socotorine aloes, joined with half a drachm or a drachm of calomel. But the exercise usually given when a

horse has taken physic must, in this case, be restrained from.

3. *Stone in the bladder*, though an unusual disease in the horse, and the fact of its existence even disputed by experienced farriers (amongst whom may be reckoned GIBSON), is certainly proper to be considered in this place.

"Although," says Mr. CLARK, "there are no cases upon record, in books of farriery, ascertaining the fact of stones being found in the bladders of horses, equal in size to those that are found in the human body, yet, from a variety of symptoms that I have observed about horses, and the frequent attacks they are liable to, of a suppression of urine, together with the great difficulty some horses have at times in making water, I have always thought there was reason to believe that many of them labour under this disorder in a greater or lesser degree ; but I have now the most undoubted proofs that horses are subject to calculi or stones in the bladder, as I have several of them in my possession that were taken out of the bladders of different horses after they were dead. Some of these stones are of a considerable size, and weigh ten ounces ; others of a smaller size, which, from their concave sides, and other appearances, evidently show that there was a number of them in one bladder at the same time, as they have the same figure and shape that a number of clay-balls would have when pressed together. That they have stones in their kidneys is very well known. The same is observed in the kidneys of sheep and oxen. It is likewise well known that some horses pass a considerable quantity of gravel with their urine, and that they are subject to gravelish complaints. Hence it may be inferred, that, as the food of horses is exceedingly simple and uniform, the calculous concretions that are formed in the urinary passages, and in the bladder, may proceed from the water they drink."

From what is known of this disease in the human subject, it is probable, that no remedy but an operation will be effectual.

BLADE-BONE, a popular name for the SCAPULA or SHOULDER-BLADE of an animal. See description of the *bones of the thorax and shoulder-blades* under BONES.

The *blade-bone* runs from below the withers to the point of the shoulder-bone, which last turns backwards towards the elbow, making an acute angle with the former. The blade-bone is joined to the ribs by muscles which have very strong tendons. In the lower end there is a shallow cavity, which receives the head of the shoulder-bone. It is surrounded with a tough cartilaginous substance, and is covered with a broad

strong ligament, which not only prevents the shoulder bone from slipping out, but renders the motion of the shoulder easy, and fit to play in all the necessary directions.

**BLAIN**, a distemper incident to cattle. It is a watery tumor growing on the root of the tongue, near the windpipe, threatening suffocation. It is first perceived by the beast's gaping and holding out his tongue, and foaming at the mouth. To cure it, cast the animal, take forth his tongue, and open the tumor with a knife: then wash it gently with vinegar and a little salt, and leave the rest to nature.

**BLAST**, a vulgar name for a circumscribed swelling and inflammation of any part of an animal. It is used as a synonyme for the term **BLIGHT**, by ignorant persons.

**BLAZE**. See **MARK**.

**BLEEDING**, or **VENESECTION**, a well-known operation, by which a due quantity of blood is taken from an animal with a view to cure some existing disease.

Horses that stand much in the stable, and are in full feed, will sometimes require bleeding; especially if their eyes look heavy, red, and inflamed; as also when their flesh feels hotter than usual, and when they mangle their hay.

Young horses should also be bled when they are shedding their teeth, as it takes off those feverish heats they are then subject to. But the cases that chiefly require bleeding, are colds, fevers of most kinds, falls, bruises, injuries of the eyes, and all inflammatory diseases.

It is right to bleed a horse when he begins to grow fleshy at grags, or at any other time when he looks heavy, and it is frequently proper to bleed before purging. When it is determined on, let the horse always be bled by measure, that you may know what quantity you take away: one or two quarts are always enough at one time; when you repeat it, allow for the nature of the disorder and the horse's constitution.

Although the operation of blood-letting is pretty well known, yet there are many untoward accidents that frequently happen from the unskilful and unexperienced in performing it. The following directions and cautions on this head are extracted from Mr. Clark's very judicious *Treatise on the Prevention of Diseases incidental to Horses*, published at Edinburgh.

As horses are naturally timorous and fearful, which is too frequently increased by bad usage and improper chastisement, they require in some cases, particularly in this of bleeding, to be taken unawares or by surprise, and the orifice made into the vein before their fears are alarmed. For this reason, the fleam and blood-stick, as it

is called, have been long in use, and in skilful hands are not improper instruments for the purpose; although with many practitioners the spring-fleam would be much safer, and on that account ought to be preferred. When a lancet is used, the instant the horse feels the point of it, he raises or shakes his head and neck, in order to shun the instrument before the operator has time to make a proper orifice, which frequently proves too small or too large; for this reason, those who have tried the lancet have been obliged to lay it aside.

Many persons tie a ligature or bandage round the neck, in order to raise the vein, and that they may strike the fleam into it with the greater certainty; but a slight view of its effects in preventing this, and its other consequences, will shew the impropriety of the practice.

When a ligature is tied round the neck previous to bleeding in the jugular veins, it is to be observed, that it stops the circulation in both veins at the same time; hence they become turgid and very full of blood, inasmuch that they feel under the finger like a tight cord; and as the parts around them are loose and soft, when the stroke is given to the fleam, the vein by its hardness or tightness slips to one side, of course it eludes the stroke; hence a deep wound is made by the fleam to no purpose, and this is sometimes too frequently repeated. Unskilful people have likewise a custom of waving or shaking the blood-stick, before they strike the fleam, in view of the horse, whose eye is fixed on that instrument; and when they intend to give the stroke, they make a greater exertion: hence the horse being alarmed by its motion, raises his head and neck, and a disappointment follows. The struggle that ensues by this means prolongs the operation; the ligature at the same time being still continued round the neck, a total stagnation of the blood in the vessels of the head takes place; and hence it frequently happens, that the horse falls down in an apoplectic fit. In such cases the operator being disconcerted, generally desists from any further attempts to draw blood at that time, under the idea that the horse was vicious and unruly, although the very treatment the horse had just undergone rendered bleeding at this time the more necessary, in order to make a speedy revulsion from the vessels of the head. Therefore, a ligature or bandage ought never to be used till such time as the opening is made into the vein; and even then it will not be necessary at all times if the horse can stand on his feet, as a moderate pressure with the finger on the vein will make the blood flow freely; but if the horse is lying on the ground, a



ligature will be necessary. But further, the concussion or shock the horse receives from his falling down in the above situation, which will always happen if the ligature is too long continued, may cause a blood-vessel within the head to burst, and death may be the consequence.

Another custom equally absurd is allowing the blood to fall in a dunghill amongst straw, in dry sand, or in dry dust, by which means no distinct idea can be formed of the quantity that is or ought to be taken away. In such cases horses have fallen down in a swoon from the loss of too much blood, before the operator thought of stopping the orifice. For this and a variety of other reasons which might be mentioned, a measure, as above observed, ought always to be used, in order to ascertain the quantity of blood that is taken away.

In pinning up the orifice, some have a custom of raising or drawing out the skin too far from the vein; hence the blood flows from the orifice in the vein into the cellular substance between it and the skin, which causes a large lump or swelling to take place immediately: this frequently ends in what is called a *favelled neck*; a suppuration follows, which proves both tedious and troublesome to cure. In cases where a horse may be tied up to the rack after bleeding in the neck, pinning up the external orifice may be dispensed with; but when a horse is troubled with the gripes or any other acute disease, in which he lies down and tumbles about, it is necessary that the orifice be pinned up with care, in order to prevent the loss of too much blood.

As the neck or jugular vein on the near side is commonly opened for convenience by those who are right-handed, the young practitioner should learn to perform on both sides of the neck. This he will find in practice to be not only useful but necessary, as he may frequently have occasion to draw blood from horses in very awkward situations; he will likewise find his account in it in a variety of cases, which it is needless here to particularise.

The proper place for making the opening in the neck or jugular vein is likewise necessary to be attended to: for when the orifice is made too low, or about the middle of the neck, where the vein lies deep under the muscular teguments, the wound becomes difficult to heal, and frequently ends in a suppuration, with a jetting out of proud flesh from the orifice; which, unluckily, is as unskillfully treated in the common method of cure, *viz.* by introducing a large piece of corrosive sublimate into the wound: this not only destroys the proud flesh in the lips of the wound, but a considerable portion of the

flesh around it; and in farriery it is called *coreing out the vein*. It frequently happens, that this corrosive application destroys the vein likewise; and sometimes violent hemorrhages follow, so as to endanger the life of the animal.

The most proper place for making the opening in the jugular vein, is where the teguments are thinnest, which is about a hand-breadth from the head, and about one inch below the branching or joining of the vein which comes from the lower jaw, and which may be distinctly seen when any pressure is made on the main branch of the vein.

In performing the operation with a fleam, the operator should hold the fleam between the forefinger and thumb of the left hand; with the second finger he is to make a slight pressure on the vein, and before it becomes too turgid or full, make the opening; the same degree of pressure is to be continued on the vein, till such time as the quantity of blood to be taken away is received into a proper measure.

Another great error, which generally prevails in opening the veins with a fleam, is the applying too great force, or giving too violent a stroke to it, by which it is forced through the opposite side of the vein: hence there is danger of wounding the coats of the arteries, as they generally lie under the veins; or, in some particular places, of wounding the tendons, especially when this operation is performed in the legs, thighs, &c. In the veins, commonly called the *plate veins*, under the breast, the consequences are frequently very troublesome to remove, and in some cases prove fatal. Mr. Gibson, in his treatise on the diseases of horses, mentions a case of a fine horse that was blooded in the plate veins for a lameness of the shoulder, which was followed with a hard oval swelling about the size of a goose egg, which extended upwards on the breast, and likewise down the leg, attended with excessive pain, fever, deadness in the horse's looks, and all the other symptoms of a beginning mortification.

In order to avoid the consequences sometimes attending these local operations in the breast, legs, &c. and as horses are more or less troublesome and restless, whereby accidents of this kind may happen, it will perhaps be advisable, in most cases of lameness, &c. to draw blood from the larger veins in the neck only, where there is less danger of accidents, more especially if a spring fleam be used: for although it might be of some advantage in particular cases to draw blood as near the affected part as possible, yet the bad consequences frequently attending it seem to counterbalance any advantages that

may be expected from it, especially as the quantity of blood drawn from the small veins is but inconsiderable, and of course no great benefit can be expected from it in horses when they are diseased.

The principal view in drawing blood is the lessening of its quantity, by which the remaining mass circulates with more freedom in the vessels; it likewise takes off the inflammatory tendency of the blood, removes spasms, &c. and prevents other bad consequences that may follow, especially in plethoric habits: and it ought always to be remembered, that when the signs or symptoms of a disease are taken from the motion of blood, the disorders arising from it depend upon its circulation being either increased or diminished: hence, therefore, all the changes which take place in the texture, quantity, and quality of the blood, are attended with a diminution or increase of its velocity.

Although the cases which may require bleeding are numerous, yet one general caution is necessary, namely, never to take away blood but when it is absolutely necessary; for it is a fluid that may be easily taken away, but cannot be so easily replaced; besides, the practice of bleeding frequently, or at stated times, is exceedingly improper, as it disposes the body to become lax, weak, and plethoric. In bleeding, therefore, a due regard must always be had to the constitution, age, strength, &c. of horses, and the state or habit of body they are in at the time.

Although we ought to be sparing of drawing blood from horses on trifling occasions when they may be said to be in health, yet when cases occur that do require it, it may not only safely, but usefully, be recommended to take away a greater quantity at once than is generally done; that is, from six to eight pounds, which will be about three or four quarts English measure, according to the urgency of the symptoms, &c. at the time, strength and age of the horse considered. For as horses are very subject to inflammatory diseases and those that are of the spasmodic kind, and as bleeding plentifully relaxes the whole system in these cases, the taking away a small quantity of blood, about one quart or two pounds, is in fact trifling with the disease; the horse is said to have been *blooded*, and that satisfies his owner and the farrier; time is lost; the disease acquires strength; it will then be beyond the power of art to mitigate or to conquer it: hence the horse falls a sacrifice to timidity and ignorance. It is to be remembered, that inflammatory diseases, particularly when the bowels are affected, make a very rapid progress in horses; and if they are not overcome at the

beginning by bleeding plentifully, the horse commonly dies in 24 or 40 hours of a gangrene and mortification in the intestines.

PROFESSOR COLEMAN, in the first part of the TRANSACTIONS of the VETERINARY COLLEGE, speaks of the *Inflammation of the Vein*, which frequently succeeds bleeding, in the following way: "Although," says he, "a vein is not strictly a perfectly circumscribed cavity, yet it has no communication with the air; and when once exposed, if the parts after the operation do not unite by the first intention, the vein is liable to great mischief. Whenever inflammation attacks the internal surface of veins from bleeding, or any wound, the disease is to be considered as of the same nature, and requiring the same remedies as the exposure of joints or other cavities. The first symptom of inflammation and suppuration within the cavity of a vein is generally a small degree of swelling about the orifice, the lips of which soon recede from each other, and a little oozing escapes from the part. At other times, the swelling will be more considerable, attended with frequent hæmorrhage, and where the swelling extends much above the orifice the vein is frequently callous and enlarged as high as the head. This enlargement and hardness of the vein proceeds, in part, from the coagulable lymph filling up its cavity, and in part from the coats of the vein being thickened; and the lymph sometimes becomes organized, and firmly unites to the internal surface of the vein. In other cases the coagulable substance does not unite to the vein, but acts as a foreign body on the whole internal surface of the vein." The professor has seen instances, where lymph many inches in length, has been taken from the jugular vein and extended as high as the veins of the face and neck, unconnected with its coats. Abscesses also form occasionally in the neighbourhood of the part diseased, sometimes with, at other times without, any communication with the vein. Although the inflammation is seldom continued below the orifice of the vein, yet he has known of one instance where the vena cava, and even the heart itself partook of the disease. The remedies usually employed are stimulating oils applied to the tumor, and where suppuration has not taken place, applications of that nature sometimes succeed. But when suppuration and hæmorrhage come on, the disease requires very different remedies.

The treatment to be pursued under such circumstances will appear from the following cases which occurred at the VETERINARY COLLEGE.

I. A horse was admitted, Aug. 30th. He had been bled in the jugular vein on the near



side, six days before. The orifice of the wound at that time was inflamed, and swelled to the size of a walnut. It also discharged and frequently bled. On further examination with a probe, the cavity of the vein was found opened. The actual cautery was applied to the lips of the wound, which immediately prevented any discharge of blood or matter.

Sept. 1st. Suppuration again took place from the same orifice. The cautery was repeated, and succeeded as before.

2d. No discharge from the vein. The neck was ordered to be fomented with warm water.

3d. and 4th. No discharge. Fomentations as before.

5th. The wound discharged a small quantity of matter, and the cautery was again applied. The next day the animal was sent for, and as the inflammation and swelling had abated, he was suffered to be taken from the college.

10th. The horse was again returned, and on enquiry it was found that by some accident the coagulum had been torn off, the discharge considerably increased, and the inflammation and swelling extended up the vein, as high as the head. The cautery was again had recourse to, and the discharge ceased. The horse was bled from the opposite vein, and a dose of physic given, which operated the next day.

15th. The wound suppurated from the same orifice, and the cautery was repeated to a greater depth.

16th and 17th. No discharge. The tumor above the wound was blistered, and by the 18th was much reduced.

19th. The granulations protruded through the orifice, but no discharge. A small quantity of the powder of vitriolated copper was sprinkled on the part.

21st. A small orifice was observed in the centre of the wound, from which matter escaped. On introducing a probe, the cavity was found to be superficial. A drachm of vitriolated copper, in a solid form, was therefore introduced into the wound, and a large poultice applied at night.

22d. The neck was fomented with warm water, and a common poultice applied at night.

23d. The inflammation and swelling gradually abated, but the orifice sloughed, and again suppurated. The cautery was repeated as before.

24th. A small discharge came from the orifice, and the cautery was again repeated.

26th. The surface of the wound sloughed, and healthy granulations appeared. The wound was afterwards dressed with a simple ointment,

and the granulations sprinkled with blue vitriol. Under this treatment the horse was discharged from the college on the 9th of October, radically cured.

II. A coach horse had been bled in the jugular vein on the near side about a week. On examination it was found to be inflamed and swelled considerably in the direction of its course towards the head, attended with frequent discharges of blood from the orifice. A large swelling had also taken place about the division of the vein above. The vein below the orifice was not inflamed, or in any degree diseased. The tumor was ordered to be blistered, and the actual cautery applied to the orifice. In three days successively no discharge of blood or matter came from the orifice. But the abscess still continued to increase, and the matter being formed; it was opened, and discharged copiously. A piece of loose coagulum, about six inches in length, was taken at the same time from the orifice of the vein. A probe being introduced, a communication was discovered between the vein and the abscess. This circumstance proved favourable to the cure; for as no hæmorrhage had taken place from the abscess, there were just grounds to believe that the pressure of the abscess had united the inner coats of the vein above, so as to prevent all communication between the vein above and the vein below. The disease was therefore treated as a common abscess. A seton was introduced up the sinus to communicate with both openings, and retained there about a week. It was then removed, and by the application of common dressings the animal completely recovered. The vein being united and rendered impervious above, the inflammation and hæmorrhage both ceased.

III. The jugular vein of a horse, on the near side, had been opened about a fortnight. The vein was considerably inflamed from the orifice to the head, attended with suppuration and frequent hæmorrhage. The external skin in the direction of the vein downward, in consequence of the application of some corrosive medicine, was in a state of ulceration from the orifice to the chest. The hot iron was applied to the external lips of the wound. The hæmorrhage and discharge ceased. A dose of purging physic was given, which in 36 hours operated. A blister was also applied to the tumor above the orifice of the vein, and the discharge occasioned by the blister diminished the enlargement.

May 22d. The external orifice opened and discharged matter, but no blood. After the operation of the blister, the parts were fomented with warm water.

26th. It was found necessary to repeat the cautery to the centre of the orifice.

28th. The tumor near the head being soft, a small opening was made which discharged largely, but appeared to have no communication with the vein above or orifice below. Fomentations and poultices were employed, and the cavity became gradually filled with new granulations.

June 2d. A small quantity of the powder of vitriolated copper, to prevent an improper growth of the granulations, was applied. The same treatment was continued until the 11th of June, when the orifice of the vein completely closed. The wound above gradually healed, and on the 17th of June the horse was discharged perfectly cured.

IV. The jugular vein of a horse, in consequence of bleeding, on the 20th of August, swelled and inflamed to a considerable degree.

Sept. 2d. The swelling having increased, attended with frequent bleeding from the orifice, the Professor was desired to see the horse. On examination it was found, that the orifice of the vein had not closed; but the coats of the vein below had united; and at this part, the cavity was impervious. The vein above the orifice continued open. The actual cautery was therefore applied to the orifice, and fomentations and poultices were applied to the tumor.

5th. The discharge from the orifice not ceasing, the cautery was repeated.

On the 6th, 7th, and 8th, fomentations and poultices were continued.

10th. The orifice of the vein not being closed, the cautery was again applied, and succeeded by fomentations and poultices as before.

14th. The cautery was repeated.

17th. A dose of purging physic was given.

21st. The tumor was blistered, and the surface of the wound dressed with simple ointment.

The part was afterwards blistered several times, and on the 2d of October the disease was totally removed.

The cases said by Mr. Clark to require bleeding, are violent bruises, or strains, in the muscular or tendinous parts; large wounds, especially when there is laceration without much loss of blood from the wound. It is proper in the beginning of all cuticular disorders or eruptions on the skin; in large swellings on the body or legs, arising from a plethoric state; in all deep punctures, or small wounds, when the horse shews symptoms of great pain, &c.; in swellings of the legs and heels, when attended with much inflammation.

Bleeding is sometimes the speediest method of giving relief in the beginning of inflammatory fevers, to which horses are very liable; it is also necessary in all violent acute pains, as in the gripes or colic, strangury or suppression of urine; in rheumatic complaints, where the pain causes stiffness or lameness, and which frequently shifts from one limb to another, or when it affects the neck, and occasions that stiffness and contraction of the muscles, which is commonly called the *chords*; in inflammation of the eyes, or palate of the mouth, the latter of which is called the *lampars*, when the horse cannot eat his food on account of the tenderness of the parts; in all recent colds, attended with rheums or disfluencies about the throat, eyes, &c.; in recent swellings of the glands about the throat, jaws, &c.; in the jaundice, inflammations of the lungs, pleura, stomach, intestines, and other viscera; in apoplexy, vertigo, or giddiness; and in all disorders where the head seems affected; in beginning imposthumations, or collections of matter, attended with great pain; in full habits of body, where proper exercise has been neglected; and when a horse breathes with difficulty on the least exercise.

On the other hand, we are cautioned not to bleed, unless in very urgent cases, during the extremes of hot or cold weather; or whilst a horse is overheated in violent exercise. It is to be avoided in all cases of extreme lowness, or weakness, produced by fatigue, disease, &c.; or after evacuations by purging or *scouring*, diabetes, or profuse staling, or profuse sweating. Bleeding is likewise improper when an imposthumation, or collection of matter, is actually formed; and likewise during the time of a horse's moulting, or casting his coat, in the autumn. In a word, it is of the utmost importance that a substantial reason should be given for the operation, before we allow a horse to be bled in any instance; as the most ignorant practitioners are, in general, the most ready to have recourse to it.

BLEIME, an inflammation arising from bruised blood between the horse's sole and the bone of the foot, towards the heel. Of *bleime* there are three sorts: the first, being bred in spoiled and wrinkled feet, with narrow heels, are usually seated in the inward or weakest quarter. In this case the hoof is usually pared, and the matter let out. The second sort, besides the usual symptoms of the first, affects the foot like a quittor. The third sort of bleimes is occasioned by small stones and gravel lodged between the shoe and the sole. In this case the foot must be pared, and the matter, if any, let out: if there



be no matter, then the bruised sole must be taken out, but if there be matter, the sole must be dressed like the prick of a nail.

Mr. St. BEL makes the following remarks on this disease in his *Lecture on the Natural and Accidental Diseases of the Foot*; he quotes the following literal description which M. Lafosse gives of this disease, better known perhaps under the name of CORNS.

"The *Bleime*," says he, "is a redness in the sole of the heels, and is of two sorts, the one natural, the other accidental; the natural sort comes without any apparent cause, in feet with large heels, and is of four kinds.

"In the first there appears a redness; produced by extravasated blood dried up in the pores of the horny sole.

"In the second, there appears in the horny part which is split, a black spot like the prick of a nail, and, on examination, the channelled or laminated flesh appears black and putrid.

"In the third kind, on paring the part, matter is observed to issue from the channelled flesh in the heels.

"In the fourth, an opening or separation is observed, on paring, between the wall and the soles of the heels, caused by the matter, which is black and in a small quantity.

"To these four kinds may be added a fifth, in which the wall of the heels is reversed to the form of an oyster-shell, which bearing inwardly, compresses the channelled flesh of the heels. These kinds of feet have no binder, and but very little sole, easily yielding to the pressure of the fingers.

"The *accidental bleime* is caused by bad shoeing; low heels, bearing upon the shocs, are thereby compressed and bruised; they may, in like manner, suffer from gravel lodged between the shoe and the heels, particularly after the foot has been pared. A bruise is the cause of this sort of *bleime*, to remedy which the foot must be short-shoed, and not pared, and thin at the heels, that the frog may totally and equally bear upon the ground.

"In the second sort, where the black spot is observed in the angle of the binder, and where the foliated flesh is putrid, an opening must be made with the butresfs, and pledgets steeped in spirits of turpentine introduced, which are to be held in a state of compression, lest the foliated flesh should rise above it. In the third kind, where, in paring, matter is observed to issue from the furrowed flesh of the heels, recourse must be had to other means.

"The fifth results from a natural defect in

the formation of the foot; the heels have scarcely any binders, the *bleime* is barely covered by the horny substance, the horse is very tender in that part, because the wall is inverted, and pinches the foliated flesh; this unnatural growth of the horn must be cut with the butresfs. Sometimes it suppurates; in which case, an opening must be made to give the matter a free issue, with care not to make it too large, lest the flesh should rise in a lump, called in French *cerise*, or cherry; the dressing consists in pledgets, laid one over the other, in order to support the flesh, which naturally falls."

Mr. St. BEL admits that it would be difficult to give a better description than this of the *bleime*, or to prescribe a more proper method of treating it; but he observes very justly, that M. Lafosse, in the design of rendering himself perspicuous, multiplies the divisions to such a degree, as to make them appear, to persons but little instructed, so many distinct disorders.

He does not entirely agree with M. Lafosse, on the cause of the *bleime*, nor does he believe it so frequently proceeds from nature. We sometimes meet with it indeed in feet whose heels are too hard, but not so often as could be supposed, after the description which he gives of it; besides, Arabian, Barbary, Turkish, Spanish, and Navarine horses, in general all horses of southern countries, are more subject to this sort of *bleime* than the northern, because their feet are naturally harder and of a drier nature than the latter.

Mr. St. BEL denies that low heels, with scarcely any binders, are subject to the natural *bleime*. On the contrary, although this vicious conformation is the predisposing cause, the *bleime* is always determined by some intermediate cause, either by the pressure of the shoe, or by gravel or stones lodged between the branches and the sole; in proof of which, he has no doubt but it is possible, by the mode of shoeing alone, to prevent this disease in feet whose heels are low and feeble.

Omitting all superfluous divisions, Mr. St. BEL states, that a *simple* CORN is at first observed by a redness in the part of the sole, situated between the heels and the binders, and that its progress is in proportion to the cause which gave rise to it. A black spot is sometimes observed, which announces that the quick or living parts are more or less affected; and in paring the foot, a black sanies is often noticed, which has destroyed the fleshy sole in this place, and even the foliated substance, so as to have excavated the wall, from whence results the inversion of the quarter.

Mr. St. BEL says he has found, by experience, that M. Lafosse's method is the best that can be followed in treating the disease; and makes some observations on the general mode practised by farriers in operating for it. The chief care to be taken in paring the foot, he says, is to preserve, as much as possible, the heels, the quarters, and the binders. On the contrary, ignorant persons begin by cutting away all the parts, without reflecting on the length of time which nature requires to reproduce them. The operator is then obliged to erect a purchase, in the room of that he had destroyed, for which reason he lays on the BAR-SHOE, upon which the frog is obliged to perform the office of the heels. This shoe is almost always ill shaped, and too heavy, and ruins the foot instead of curing it; whereas, if the farrier skilfully preserved the parts which he mischievously destroys, he would avoid the use of this shoe, and employ a kind of half moon shoe, which, by leaving the frog and heels free, would facilitate the growth of the latter. See the article FOOT.

Mr. John Lawrence admits of only two species of *bleime*; the *natural* and *accidental*; the one occasioned by compression of the hoof itself, in bad feet, with wiry heels and scarce any binders; the other by that of the shoe, or the intrusion of gravel, or small stones, under it. "The preventive remedy," he says, "is the *new style of shoeing*. If the bruise appear dry, with no tendency to suppuration, extirpate it by degrees with the knife, or rub in frequently some spirituous application, and nature will in time outgrow the blemish; turpentine and camphorated spirits mixed: should the horse travel tender, apply a light bar-shoe. In case of suppuration, make a small opening for the matter, and stop with pledgets laid one over the other, dipped in the proper digestive, warm. In narrow heels, cut away the horn which presses upon the *bleime*."

**BLEND-WATER**, called also **MOREHOUGH**, a distemper incident to black cattle, in which the liver is affected. In order to cure it, the old writers on farriery tell us to take bole-armoniac, and as much charcoal dust as will fill an egg-shell, a good quantity of the inner bark of an oak, dried and powdered; and pounding the whole together, give it to the beast in a quart of new milk. Though this disease is certainly not understood, the remedy by no means deserves to be deemed absurd.

**BLEMISH**, a kind of imperfection in a horse, of greater or less magnitude, according to the accident which produced it. Mr. John

Lawrence, a very competent judge, says, "Blemishes consist of broken knees, loss of hair in the cutting places, mallenders and fallenders, cracked heels, false quarters, splents, or excrescences which do not occasion lameness; and I should suppose, wind galls and bog-spavins, if they prevail to any great degree; these last may have been repressed immediately previous to sale, and may re-appear in a few miles riding. Neither wind-galls nor bog-spavins impede a sound warrant, provided the horse does not go lame; it may be the same, probably, in respect to a false quarter, although, I think, I have never seen a horse with the latter defect, which I should have accepted as a sound one."

**BLENNORRHŒA**, **BLENNORRHAGIA** (from *βληνω*, *mucus*, and *ῥεω*, *to flow*), a flux of mucus of a purulent appearance, from the penis or vagina, in the horse or mare. It is most common in very young and very old animals, but especially in stallions, whose procreative faculties are called too frequently into action.

Mr. John Lawrence, in his treatise on horses, speaks thus "of the gonorrhœa, mattering, and fall of the penis."

"A stallion weakened by too much covering," says he, "will sometimes have a thin white discharge. Bathe the testicles with a restraining embrocation at night, and wash them in the morning with cold water, rubbing them dry with a cloth; or ride him up to the belly in water every morning the first thing." He also directs the following

#### STRENGTHENING BALL.

Take Balsam of capivi,  
Olibanum,  
Gum-mastic powdered, of each two  
drachms;  
Bole armoniac, half an ounce;

Make them into a ball with honey and liquorice powder, and repeat it night and morning; afterwards once a-day, as long as wanted.

"Should there be a foul ichorous discharge from chafing or ulceration, externally or internally, first wash well with soap and water warm, which it may be also useful to inject. Apply the following, milk-warm, to any excoriation or sore, with a soft rag or sponge:

Take lime-water, one quart;  
Sugar of lead, half an ounce. Mix.

"In case of fungous flesh, half an ounce of vitriolated copper may be added. For an injection,



Take balsam of capivi, half an ounce ;  
 The yolk of an egg ;  
 Lime-water, half a pint ;  
 Honey of roses, two ounces.

“ If the penis be much inflamed and swelled, foment as often as necessary, with leaves of mallows and marshmallows, camomile flowers, melilot, and fumitory, each three handfuls ; rosemary, wild thyme, southern-wood, and elder-flowers, each two handfuls ; juniper and laurel-berries bruised, each four ounces. Boil them in eight quarts of water to six. Strain, and foment with two flannels, by turns, as warm as convenient, morning and evening. A pint of British brandy may be added. While using, keep it warm over a chafing-dish. The remaining liquor may be put again on the herbs, for next day's occasion.

“ A *feminal gleet* in horses, from plethora and want of exercise, is remedied by venesection, mild purgatives, alterants and regular attention to cleanliness ; but partially in some constitutions, where the feminal secretion is very copious ; this joined to the other inconvenience of stallions being more liable to grease and foulness than geldings, has often made me wonder that so many of the former should be kept in the London Breweries.”

BLIGHT. See BLAST.

BLINDNESS, a disease incident to horses in common with other animals. For the causes, cure, &c. of blindness, see the article EYE. Blindness is said to happen more especially to horses of an iron-grey, or dapple-grey colour, when ridden too hard, or backed too young. See *Phil. Trans.* No. 37.

It may be discovered by the walk or step, which in a blind horse is always uncertain and unequal : because he does not set down his feet boldly when led in the hand ; though, if the same horse be mounted by an expert horseman, and the horse of himself have mettle, the fear of the spur will make him go more freely, so that his blindness can scarcely be perceived. Another mark whereby a horse may be known to have lost his sight is, that upon hearing any body enter the stable, he will prick up his ears, and move them backwards and forwards, as mistrusting every thing, and being in continual alarm on the least noise.

BLOOD, a red fluid, propelled by the heart, arteries, and lungs, through the whole body of an animal. See the articles HEART, LUNGS, BLOOD-VESSELS, CIRCULATION, &c.

Although the fluid which circulates through the vessels of all animals be not of a red colour, yet it is certain that the functions of animal life

cannot be performed without the circulation of something equivalent to blood. The common appearance of the blood when drawn from a vein in the human body is well known. It first seems an homogenous red liquor ; then it consolidates into one uniform mass ; in a little time, a yellowish watery liquor begins to separate from it, which is more or less in quantity according to the state in which the blood happens to be ; the red mass, in the mean time, contracts greatly in its dimensions, and increases in solidity. But this increase of solidity is likewise proportional to the state of the blood at the time ; in strong people, if attacked with a violent inflammatory disease, the solid part is exceedingly tough, inso-much that Dr. Huxham says he has sometimes found it almost like a piece of flesh itself ; whereas, in other diseases, the solid part is very soft and tender, breaking in pieces with the slightest touch.

Generally speaking, the blood of brute animals is of nearly the same texture with the human, at least it is so in QUADRUPEDS. It consists of, 1st. The serum. 2d. The coagulable lymph. 3d. The red globules. 4th. The superfluous water. 5th. Extraneous substances introduced.

The serum, coagulable lymph, and superfluous water, are diffused through one another, and the red part is mechanically mixed with them. Some of the extraneous substances are also mechanically mixed with them, and some diffused through them.

In Dr. Lewis's notes on Newman's Chemistry we have the following account of the blood, and the parts into which it may be resolved. “ Recent blood is equally fluid, and in taste somewhat saline. Viewed by a microscope, it appears composed of numerous red globules swimming in a transparent fluid. On standing for a little time, it separates into a thick crassamentum and fluid serum. By agitation, it continues fluid : a consistent gelatinous matter adheres to the stirrer, which, by repeated ablution with water, becomes white. Received from the vein in warm water, it deposits a quantity of transparent filamentous matter, the red portion continuing dissolved in the water. On evaporating the fluid, a red powdery substance is left. It congeals by frost, and becomes fluid again by warmth ; after liquefaction, it quickly putrefies. Fluid and florid blood exposed to a temperate air, putrefies sooner than such as is more dense. Insipidated to dryness, it leaves a dark-coloured mass, amounting, at a medium, to about one fourth of the weight of the blood, of a bitter saline taste, easily inflammable, burning with a blueish flame. The exsiccated blood is not so-

table in acid or alkaline liquors; but gives some tincture to water and to spirit of wine, and is more powerfully acted upon by dulcified spirit of nitre. Recent blood is coagulated by the mineral acids, and by most of the combinations of them with earthy and metallic bodies. With vegetable acids, and with solutions of neutral salts, it mingles equably without coagulation. Alkalies, both fixed and volatile, render it more fluid, and preserve it from coagulating.

"The serum of blood is more saline than the crassamentum, and does not so speedily putrefy. It freezes somewhat more difficultly than pure water; and its aqueous part evaporates, by a gentle warmth, somewhat more readily, leaving about one-twelfth of the weight of the serum of a solid yellowish pellucid matter. Exposed to heat a little greater than that of the human body, it coagulates into a solid mass, without any considerable evaporation. Both this coagulum and the inspissated serum are readily inflammable in the fire, not dissoluble in water, or in spirit of wine, in acid or in alkaline liquors."

But the texture of the blood discoverable by a microscope, has engaged the attention of the learned much more than the chemical analysis ever did. Lewenhoeck fancied he discovered, that the blood consists of red globular particles swimming in a quantity of transparent liquor, each globule composed of six smaller ones packed together. While the six continued to adhere, their colour was red; but when separated, they became yellow, and thus formed what is called the *serum*. He even imagined he had discovered that each of the serous globules consisted of six smaller ones, and that these when broken down constituted some more subtle and penetrating liquor than the serum, &c. and this was for a long time received as an undoubted fact; and many theories were built upon it, and elaborate calculations made. Father de Torre also, with microscopes which he alleged were capable of magnifying to an incredible degree, found that the red particles of the blood were of an annular figure, with a perforation in the middle; and that the ring itself was formed of several joints. Of this opinion indeed is Dr. Duncan of Edinburgh. Mr. Hewson however has since contended, that "the red particles of the blood, improperly called *globules*, are *flat* in all animals, and of very different sizes in different animals. In man they are small, as flat as a shilling, and appear to have a dark spot in the middle. In order to see them distinctly (says Mr. Hewson), I dilute the blood with fresh serum. My predecessors, not having thought of this, could not see them distinctly. And Lew-

enhoeck in particular, imagining a round figure fittest for motion, concluded they must be round in the human body; though he and others allowed that in frogs, &c. where they viewed them distinctly from the blood being thinner, they were flat. Now I prove that they are flat in all animals. In the human blood, where these particles are small, it is difficult to determine what that black spot is which appears in the centre of each. Some have concluded that it was a perforation: but in a frog, where it is six times as large as in a man, it is easy to shew that it is not a perforation, but on the contrary is a little solid, which is contained in the middle of a vesicle. Instead, therefore, of calling this part of the blood red *globules*, I should call it red *vesicles*; for each particle is a flat vesicle, with a little solid sphere in its centre.

"I find that the blood of all animals contains vesicles of this sort. In human blood there are millions of them; and they give it the red colour. But in insects they are white, and less numerous in proportion than in man and quadrupeds. As they are flat in all animals, I suspect that shape is a circumstance of importance, but can be altered by a mixture with different fluids. And I find that it is by a determinate quantity of neutral salt contained in the serum, that this fluid is adapted to preserving these vesicles in their flat shape: for, if they be mixed with water, they become round, and dissolve perfectly; but add a little of any neutral salt to the water, and they remain in it, without any alteration in their shape, and without dissolving.

"Now, when it is considered, that the blood of all animals is filled with these particles, we must believe that they serve some very important purpose in the animal economy; and since they are so complicated in their structure, it is improbable they should be made by mechanical agitation in the lungs or blood-vessels, as has been suspected, but probably have some organs set apart for their formation. This I shall endeavour to prove, when I have explained their structure a little more particularly, and mentioned the manner in which I exhibit it. I take the blood of a toad or frog, in which they are very large; I mix it with the serum of human blood to dilute it; I find them appear all flat; so they do in the blood-vessels of this animal, as I have distinctly seen in the web between its toes, whilst the animal was alive and fixed in the microscope. Their appearance in these animals is not unlike slices of cucumber. I next mix a little of the blood with water, which immediately makes them all round, and then begins



to dissolve them whilst they are round. I incline the stage of the microscope, so as to make them roll down it; and then I can distinctly see the solid in the middle fall down from side to side like a pea in a bladder. A neutral salt added to them at this time brings them back to their flat shape: but if the salt be not added, the water gradually dissolves away the vesicle; and then the little sphere is left naked. Such is the composition of these particles. I have exhibited these experiments to a considerable number of my acquaintance, who all agree in their being satisfactory. The microscope I use is a single lens, and therefore as little likely to deceive us as a pair of spectacles, which, as is allowed by all who use them, do not disfigure objects, but only represent them larger.

"From further experiments, I am convinced, that the use of the thymus and lymphatic glands is to make the middle solid pieces: and I can prove it in as satisfactory a manner as you can do the use of any viscus in the human body; that is, by opening these glands, and examining the fluid contained in their cells, which I find to be full of these little solids. I moreover find, that the lymphatic vessels take them up from those glands, and convey them into the blood-vessels which carry them to the spleen, in whose cells they have the vesicles laid over them; so that the thymus and lymphatic glands make the central particles, and the spleen makes the vesicles that surround them. That this is the use of the spleen appears from examining the lymph which is returned from its lymphatic vessels; for that lymph, contrary to what is observed in other parts of the body, is extremely red.

"But besides having these glands set apart for making the red vesicles of the blood, I find that they are also made in the lymphatic vessels in different parts of the body, whose coats have blood-vessels properly constructed for this secretion. So that the thymus and lymphatic glands are no more than appendages of the lymphatic system, for making the middle particles; and the spleen an appendage to the lymphatic vessels, for making the vesicles which contain these middle particles.

"I conjecture that it is the coagulable lymph which is converted into this red part of the blood, from a curious fact that has long been known; namely, that the blood in the splenic vein does not coagulate when exposed to the air, as the blood of other veins does; so that it seems to be robbed of its coagulable lymph in passing through the spleen.

"It is very remarkable, that the spleen can

be cut out of an animal, and the animal do well without it. I made the experiment on a dog, and kept him a year and a half without observing his health to be in the least impaired. From this some have concluded the spleen to be an useless weight; which is absurd, when we consider that all animals with red blood have it. Therefore it is more consistent with what we know of the animal economy, to conclude, that since an animal can do well without it, there is probably some part of the body that can supply its place.

"Insects have vesicles constructed in a similar way to ours, but differing in colour. But insects have neither spleen, thymus, nor lymphatic glands; and therefore in them probably these vesicles are entirely fabricated in the lymphatic vessels. But to us, and other of the more perfect animals, besides the lymphatic vessels, nature has given those glands, that a proper quantity of those important vesicles might be the better secured to us; just as she has given us two ears, the better to secure us hearing through life, though we can hear perfectly well with one."

On this hypothesis we shall only remark, that if the red globules are prepared in the manner above mentioned, and the lymphatic vessels are excretories of those glands where the red particles are formed; then if there is any vessel where all these excretories unite, in that vessel the lymph ought to appear very red, on account of the accumulated quantity of red globules brought thither from all parts of the body. But no such redness seems ever to have been taken notice of by any anatomist; and this forms an objection perhaps, which will not be easily removed.

Many other hypotheses have been invented concerning the formation of the blood, and various opinions delivered concerning its red colour. In a lecture delivered at Newcastle in 1773, by Dr. Wilson of that place, he asserts "that it is self-evidently the office of the veins to elaborate the fluids into that form and composition which we know by the name of *red blood*." The self-evidence here, however, is by no means apparent to us; nor does he at all point it out in an intelligible manner. Dr. Cullen, in the physiological part of his *Institutions of Medicine*, acknowledges that we know but little of the formation of any of the animal fluids; and concerning the microscopical observations, &c. on the blood, gives his opinion in the following words (§ ccliv.), "The red globules have been considered as an oily matter, and from thence their distinct and globular ap-

pearance has been accounted for: but there is no direct proof of their oily nature; and their ready union with, and diffusibility in, water, renders it very improbable. As being microscopical objects only, they have been represented by different persons very differently. Some have thought them spherical bodies, but divisible into six parts, each of which in their separate state were also spherical; but other persons have not observed them to be thus divisible. To many observers they have appeared as perfectly spherical; while others judge them to be oblate spheroids, or lenticular. To some they have appeared as annular, and to others as containing a hollow vesicle. All this, with several other circumstances relating to them, very variously represented, shew some uncertainty in microscopical observations; and it leaves me, who am not conversant in such observations, altogether uncertain with respect to the precise nature of this part of the blood. The chemical history of it is equally precarious; and therefore what has been hitherto said of the production and changes happening to these red globules, we choose to leave untouched. We suppose that the red globules, when viewed singly, have very little colour; and that it is only when a certain number of them are laid upon one another, that the colour appears of a bright red: but this also has its limits; so that when the number of globules laid on one another is considerable, the colour becomes of a darker red. Upon this supposition, the colour of the mass of blood will be brighter or darker as the colouring part is more or less diffused among the other parts of the mass; and we think this appears to be truly the case from every circumstance that attends the changes which have been at any time observed in the colour of the blood."

Concerning the uncertainty of microscopical, as well as chemical experiments, we shall not dispute; though the conclusion against them seems carried too far. But with regard to the colour of the blood, we apprehend it has been known, almost, if not altogether, since the discovery of the circulation, that the florid or dark colour depends on the presence or absence of oxygen, and not upon any number of globules.—Thus the blood returning from the veins is of a dark colour. Though diluted with the fresh chyle from the subclavian vein, it continues of the same dark colour till it passes through the lungs, upon which it instantly assumes a very florid red; but it can never be proved that the globules in the pulmonary vein are at all less numerous than in the pulmonary artery.—That this change of colour may be effected by the air

through membranes much thicker than we can suppose the vessels of the lungs to be, has been demonstrated by Dr. Priestley.

With regard to the uses to which the blood is subservient in the animal economy, they are so various, and of such an important nature, that some have not scrupled to affirm the blood to be actually possessed of a living principle, and that the life of the whole body is derived from it. This opinion it is said was first hinted by the celebrated Harvey, but the hypothesis more properly belongs to the late Mr. John Hunter, who supports his opinion by the following arguments: 1st. The blood unites living parts, in some circumstances, as certainly as the yet recent juices of the branch of one tree unite it with that of another. Were either of these fluids to be considered as extraneous or dead matters, he thinks they would act as stimuli, and no union would take place in the animal or vegetable kingdom. This argument, Mr. Hunter imagines, is still further established by the following experiment. Having taken off the testicle from a living cock, he introduced it into the belly of a living hen. Many weeks afterwards, upon injection of the liver of the hen, he injected the testicle of the cock; which had come in contact with the liver and adhered to it. He alleges, that in the nature of things, there is not a more intimate connection between life and a solid, than between life and a fluid. For, although we are more accustomed to connect it with the one than the other, yet the only real difference which can be shewn between a solid and a fluid is, that the particles of the one are less moveable among themselves than those of the other. Besides, we often see the same body fluid in one case and solid in another. 2. The blood becomes vascular like other living parts. Mr. Hunter affirms, that, after amputations, the coagula in the extremities of arteries may be injected by injecting these arteries; and he had a preparation in which he thought he could demonstrate vessels rising from the centre of what had been a coagulum of blood, and opening into the stream of the circulating blood. 3. Blood taken from the arm in the most intense cold which the human body can bear, raises the thermometer to the same height as blood taken in the most sultry heat. This he considers as a strong proof of the blood's being alive; as living bodies alone have the power of resisting great degrees both of heat and cold, and of maintaining in almost every situation, while in health, that temperature which we distinguish by the name of *animal heat*. 4. Blood is capable of being acted upon by a stimulus. In proof of this, he observes, that it coagulates from expo-



ture, as certainly as the cavities of the abdomen and thorax inflame from the same cause. The more it is alive, that is, the more the animal is in health, it coagulates the sooner on exposure; and the more it has lost of its living principle, as in the case of violent inflammations, the less is it sensible to the stimulus produced from its being exposed, and it coagulates the later. 5. The blood preserves life in different parts of the body. When the nerves going to a part are tied or cut, the part becomes paralytic, and loses all power of motion; but it does not mortify. If the artery be cut, the part dies, and mortification ensues. What keeps it alive in the first case? Mr. Hunter believes it is the living principle which alone can keep it alive; and he thinks that this phenomenon is inexplicable on any other supposition, than that life is supported by the blood. 6. Another argument he draws from the case of a fractured os humeri he had occasion to observe. A man was brought into St. George's hospital for a simple fracture of the os humeri, and died about a month after the accident. As the bones had not united, Mr. Hunter injected the arm after death. He found that the cavity between the extremities of the bones was filled up with blood which had coagulated. This blood was become vascular. In some places it was very much so. He does not maintain that all coagulated blood becomes vascular: and indeed the reason is obvious; for it is often thrown out and coagulated in parts where its becoming vascular could answer no end in the system: as, for example, in the cavities of aneurismal sacs. If it be supposed, that, in such cases as that just now mentioned, the vessels are not formed in the coagulum, but come from the neighbouring arteries, he thinks it equally an argument that the blood is alive; for the substance into which vessels shoot must be so. The very idea, that such a quantity of dead matter as the whole mass of blood, circulates in a living body, appears to him absurd.

The system which at present stands opposed to that of Mr. Hunter, considers the brain and nervous system as the fountain of life; and that, so far from receiving its life from the blood, the nervous system is capable of instantaneously changing the crisis of the blood, or any other animal fluid; and though the nervous system cannot continue its actions for any length of time if the action of the blood-vessels is suspended, yet the heart and blood-vessels cannot act for a single moment without the influence of the nervous fluid. Hence, say they, it is plain we must suppose the nervous system, and not the blood, to contain properly the life of the

animal, and consequently to be the principal vital organ. The secretion of the vital fluid from the blood by means of the brain is, by the supporters of this hypothesis, denied. They say, that any fluid secreted from the blood must be aqueous, inelastic, and inactive; whereas the nervous fluid is full of vigour, elastic, and volatile in the highest degree. The great necessity for the circulation of the blood through all parts of the body, notwithstanding the presence of the nervous fluid in the same parts, they say is, because some degree of tension is necessary to be given to the fibres, in order to fit them for the influx of the nervous fluid; and this tension they receive from the repletion of the blood-vessels, which are every-where dispersed along with the nerves.

To follow this dispute through every argument that hath been, or that may be used by both parties, would prove tedious, and to us appears in a great measure unnecessary, as the following short considerations seem to decide the matter absolutely against the patrons of the nervous system. In the first place, then, if we can prove the life of the human body to have existed in, or to have been communicated from a fluid to the nervous system, the analogical argument will be very strongly in favour of the supposition that the case is so still. Now, that the case once was so, is most evident; for the human body, as well as the body of every other living creature, in its first state, is well known to be a gelatinous mass, without muscles, nerves, or blood-vessels. Nevertheless, this gelatinous matter, even at that time, contained the nervous fluid. Of this there can be no doubt, because the nerves were formed out of it, and had their power originally from it; and what is remarkable, the brain is observed to be that part of the animal which is first formed. Of this gelatinous fluid we can give no other account, than that it was the nutritious matter from which the whole body appears to be formed. At the original formation of man, and other animals, therefore, the nutritious matter was the substratum of the whole body, consisting of muscles, nerves, blood-vessels, &c. nay more, it was the immediate efficient cause of the nervous power itself. Why should it not be so now as well as then? Again, in the formation of the embryo, we see a vital principle existing as it were at large, and forming to itself a kind of regulator to its own motions, or a habitation in which it chooses to reside, rather than to act at random in the fluid. This habitation, or regulator, was undoubtedly the nervous system, and continues so to this moment; but at the same time, it is no less

evident that a nutritious fluid was the immediate origin of these same nerves, and of that very nervous fluid. Now we know, that the fluid which, in the womb, nourishes the bodies of all embryo animals, is necessarily equivalent to the blood which nourishes the bodies of adult ones; and consequently, as soon as the blood became the only nutritious juice of the body, at that same time the vital or nervous fluid took up its residence there, and from the blood diffused itself along the nerves, where it was regulated exactly according to the model originally formed in the embryo. Perhaps it may be said, that the vital power, when once it hath taken possession of the human or any other body, requires no addition or supply, but continues there in the same quantity from first to last. If we suppose the nervous power to be immaterial, this will indeed be the case, and there is an end of reasoning upon the subject; but if we call this power a volatile and elastic fluid, it is plain that there will be more occasion for recruits to such a power than to any other fluid of the body, as its volatility and elasticity will promote its escape in great quantities through every part of the body. It may also be objected, that it is absurd to suppose any fluid, or mechanical cause, capable of putting matter in such a form as to direct its own motions in a particular way: but even of this we have a positive proof in the case of the electric fluid. For if any quantity of this matter has a tendency to go from one place to another where it meets with difficulty, through the air for instance, it will throw small conducting substances before it, in order to facilitate its progress. Also, if a number of small and light conducting substances are laid between two metallic bodies, so as to form a circle, for example; a shock of electricity will destroy that circle, and place the small conducting substances nearer to a straight line between the two metals, as if the fluid knew there was a shorter passage, and resolved to take that, if it should have occasion to return. Lastly, it is universally allowed, that the brain is a secretory organ, made up of an infinite number of small glands, which have no other excretories than the medullary fibres and nerves. As a considerable quantity of blood is carried to the brain, and the minute arteries end in these same glands, it follows, that the fluid; whatever it is, must come from the blood. Now, there is no gland whatever, in the human, or any other body, but will discharge the fluid it is appointed to secrete, in very considerable quantity, if its excretory is cut. Upon the cutting of a nerve, therefore, the fluid secreted by the brain ought to be discharged; but no such dis-

charge is visible. A small quantity of glairy matter is indeed discharged from the large nerves; but this can be no other than the nutritious juice necessary for their support. This makes it plain, even to demonstration, that the fluid secreted in the brain is *invisible* in its nature; and as we know the nervous fluid hath its residence in the brain, it is very probable, to use no stronger expression, that it is the peculiar province of the brain to secrete this fluid from the blood, and consequently that the blood originally contains the vital principle.

After it is allowed that the blood contains the vital principle, it becomes another question not very easily solved, Whence is this vital principle derived?—For this we can only discover two sources; namely, the chyle or aliment from which the blood is prepared, and respiration. The latter has been commonly held as the principal source of the vital principle; and, for a long time, it was generally thought that there was a kind of vivifying spirit in the air, which being absorbed by the blood at each inspiration, communicated to that fluid the quality necessary for preserving animal life. As a proof of this it was urged, that life cannot be supported without respiration, and that air which hath been often breathed ceases to be capable of supporting life; because when once it has been totally deprived of its vivifying spirit, it can communicate none to the blood in any subsequent respirations.—This doctrine, however, has been denied, and generally thought to be exploded by modern discoveries. Dr. Hales indeed brings several apparently decisive experiments against it. They will not, however, bear the test of a nice examination; and the more especially when those experiments of Dr. Priestley which apply to this subject are taken into the account. As this comparison, however, would lead us into too wide a field of discussion, we refer our readers to the writings of both those philosophers, and proceed to give some account of the means by which the circulation of the blood is carried on.

From the time of Harvey till very lately, this was supposed to depend chiefly on the muscular power of the heart and arteries, which by some physiologists have been thought to be prodigiously great. Accordingly many calculations, requiring no small degree of mathematical knowledge to understand them, have been made of the forces requisite to perform this circulation. Other physiologists, however, have thought proper to take in several auxiliary helps, as the motion of the muscles, respiration, &c. and Dr. Hales's experiments render it evident, that respiration has a considerable influence. It can-



not, however, be the sole cause, seeing the circulation is carried on in animals which do not respire.—In 1773, Dr. Wilson, in the lecture already quoted, suggested a new principle of motion, which we believe was never used before to account for the circulation of animal fluids. It is shortly this: “As the fluids of the human body do all of them suffer a continual waste, and consequently require a constant supply in proportion, we must look upon their going out of the body to be the end of their motion, and their entering into the body to be the beginning of it; and hence we are to look for the origin of all the motion of the fluids in that part of the system where the new supplies are taken in. This is the *primæ viæ*, where the lacteals absorb a fluid from the digested aliment, and convey it into the blood. The power by which this is accomplished, is necessarily independent of the heart, as having not the least connection with it. It has been said to be the same with that which causes fluids to rise in capillary tubes; but though very probably the powers in both cases may be the same, there is this remarkable difference between them, that in capillary tubes the fluids only rise to a certain height, and will not rise at all unless the tubes are empty. In the lacteals they rise in vessels already full, and continue to do so. Neither is the force whereby this absorption is performed to be accounted little; seeing the supply by the chyle must constantly be equal to the waste which is continually taking place in the fluids already contained in the vessels. We see also, with what force an absorption of this kind sometimes takes place in other cases; thus ropes will absorb water with such strength as to raise immense weights fastened to them, and which no mechanical injection of water into small tubes could possibly accomplish. What is already said of the lacteals applies also to the lymphatics; and from thence we are almost tempted to conclude, that the case is the same with the sanguiferous veins also; that though there may be a continuation of some arteries into the veins corresponding with them, yet that, for the most part, these vessels extravasate the blood into small cavities, which is then taken up by the absorbent power of the veins, and returned to the heart.

“If, however, the vessels continued absolutely full, it would be impossible that any motion could be carried on in them; and to continue and regulate the circulation, the heart with its cavities is provided. Let us suppose, that by the above-mentioned power the veins are all full, and the auricles or chambers into which the veins empty themselves are full also: where is the collected

stream in the veins to go next? There is no room for more in the auricle. What must be done? The auricle contracts and empties itself. The consequence is a sudden vacuum equal to what the auricle could contain; the turgid veins, urged by the absorbing power above mentioned, rush their contents into the auricle to fill up the vacuum again, and all behind moving in the venous direction advances forward with so much force, that the veins near the heart sustain a pulsation from the regurgitation of this impetuous stream, when the auricle shuts upon it to empty itself. In short, the full auricle occupies a determinate quantity of space in the breast: when it is emptied, there is a non-resisting vacuum of so much space as was full before, and thither there is a mechanical nîsus from the remotest filament of a vein over the whole body, which becomes conspicuous in the torrent that rushes every other moment from the mouth of the *vena-cava* into this vacuum.”

This is a short abstract of Dr. Wilson's new theory of the circulation. According to him, this absorbing power of the veins is the principal agent, while the heart and arteries do no more than empty themselves of the blood with which they are filled by the veins. Even this cause, however, he says, would not be sufficient to carry on the circulation for a single moment, without the presence of another which he calls *life*, and does not consider as absolutely unmechanical, though we cannot reduce it either to mechanical rules or ideas. But as we apprehend all speculations concerning such causes must be arbitrary and without foundation, we forbear to give any account of the doctor's opinion on this subject.

It hath been a general opinion, that blood, as it exists in the bodies of animals, contains a considerable quantity of common air; and indeed it is certain, that blood, after it has been drawn from the veins of any animal, and afterwards placed under the receiver of an air-pump, yields a very considerable quantity of air upon exhausting the receiver: but if a portion of any blood-vessel is tied up so as to prevent the escape of its contents, and then cut out of the body and placed under a receiver, it will not swell, or shew the least sign of its containing any quantity of air whatever. Of this and every other part of the subject a very comprehensive view is taken in Mr. Hunter's work, published since his death, entitled “A Treatise on Inflammation,” &c.

BLOOD, a term used to denote a particular breed of the horse; (see BREEDING). Mr. Robert Lawrence says, “The hips of the blood

horse are lower and narrower, proportionably, than those of the cart-horse; on this account he is supposed to be weaker than the latter; but this is not the fact. For if the croupe of a blood-horse is measured from hip to hip, the space will be found (proportionably) to be as large as that of a horse with wider and higher hips; because the surface is more circular, which, if extended flat, would occupy as wide a space. Hence it is evident that the blood-horse, in this instance, possesses as large a proportion of muscle, although it is concentrated into a circular form."

His worthy namesake, however, though he admits the advantages resulting from the diffusion of racing-blood amongst our hunters, hacks, and coach horses, says, nevertheless, that "if we are indebted to blood for all our advantages, it is equally certain, that an injudicious use is too frequently made of it. We observe too much delicacy and pliability of sinew, with too little bone and substance, in great numbers of those horses destined to quick draft. The legs of such will scarce ever accompany the carcase in a proportional share of labour over turnpike roads. As to the refuse of our studs of race-horses, it consists usually of a parcel of half-got, delicate, weak, spider-legged creatures, which it is a misery to see applied to any labour whatever. Our grand *desideratum* now is, substance well placed, which ensures both power and action; a deep and well-proportioned frame; to support these through the piece, bone under the knee, and tough feet."

"Nothing, surely," says the same writer in another place, "can be more absurd than to choose a race-horse with indifferent or improper shape for action, merely on the consideration of *favourite blood*, since opinions on that head are so variable, and even determinable by fashion; and since we have so many examples before our eyes, of full brothers, one of which shall be a capital racer, from his superior shape and size, the other, from his inferiority in those respects only, barely able to beat a good leather-plater. Exceptions to the general rule we know must occasionally occur, in this as well as other cases; but the average advantage will ever be found on the side of symmetry. Were shapes equal, or the disproportion not over-great, every sportsman would surely prefer a pedigree of the old blood, and where there were as few deviations as possible from those grand and genuine fountains, the Darley and Godolphin Arabians; but for capital shape, I would always overlook either a

Sampson cross, or a large sprinkling of new or unfashionable blood."

Mr. Taplin deprecates "the inconsistency of bringing cross-bred heavy horses into the chace, where their own weight, and want of action, lay the foundation of their deficiency: for in hard or long running they become inevitably exhausted, and frequently fall victims to the imprudent perseverance of their riders. Those juvenile or inattentive sportsmen," says he, "whose experience has been exceedingly limited, or observations confined, may not yet be perfectly convinced that BLOOD-HORSES (notwithstanding the popular clamour of their deficiency in bone) will exceed in *speed, strength, and bottom*, whatever horses of an opposite description may be brought into the field; and of this fact I am so exceedingly well convinced by experimental observation and unremitting attention, that in a long chace with fleet hounds, running *breast high*, and *across a country*, nothing but horses three parts or thorough bred can ever lay by the side of them."

Colts of the blood kind acquire strength comparatively at a much earlier age than others, since it is usual to begin to race them at about two years old, but their future growth is considerably impeded by the violent treatment which they are obliged to undergo in training; and on this account they seldom arrive to a large size. But this circumstance should not discourage the breeding of blood-horses, for in their natural properties they are indubitably superior to all others. This superiority is not confined to internal or invisible causes only; but arises in a great measure also from the external conformation of their bodies. The mechanical advantages which they derive from this source, consist in the great length of their quarters, and the depth and capacity of their chests; for in their relative proportion with horses of an ordinary species, they are not only much stronger, but possessed also of greater speed.

"The most ostensible characteristic of the blood-horse," says Mr. Richard Lawrence, "is *compactness of fibre*. This may be traced in every part, namely, skin, muscle, tendon, ligament, bone, and hoof. It is this property which increases his strength without adding to his bulk. Other parts, such as the brain, heart, and blood-vessels, are remarkable: the heart of the famous running-horse, ECLIPSE, weighed fourteen pounds. The texture of the skin also is finer, the hair softer, and the legs smooth and not tufted.



"The capacity of the cranium or skull, which contains the brain, is proportionably larger than that of the cart-horse; even the features of the face, viz. ears, eyes, and nostrils, are on a bolder scale.

"His principal excellence, however, arises from his powers of continuance, or of supporting fatigue.

"These powers in the horses of Arabia (if we may give credit to the assertions of travellers) are wonderful, and the more so when we reflect on the great heat of that climate. The true Arabian horse of the first race, may be considered as the most perfect model of the species." See ARABIAN HORSE.

The blood-horses of Great Britain are originally descendants from this stock, but not from the most genuine sort.

BLOOD-HOUND, in zoology, the *canis sagax* of Linnæus (see CANIS), *le chien courant* of Buffon, the *sleuthounde* of the Scots: The hound, or dog, with long, smooth, and pendulous ears. This was a dog of great use, and in high esteem with our ancestors: his employ was to recover any game that had escaped wounded from the hunter, or been killed and stole out of the forest. He was remarkable for the acuteness of his smell, tracing the lost beast by the blood it had spilt; and from whence the name is derived. This species could, with the utmost certainty, discover the thief by following his footsteps, let the distance of his flight be ever so great, and through the most secret and thickest coverts: nor would he cease the pursuit, till he had taken the felon. They were likewise used by Wallace and Bruce during the civil wars. The poetical historians of the two heroes, frequently relate very curious passages on this subject; of the service these dogs were of to their masters, and the escapes they had from those of the enemy. The blood-hound was in great request on the confines of England and Scotland; where the borderers were continually preying on the herds and flocks of their neighbours. The true blood-hound is large, strong, muscular, broad-breasted, of a stern countenance, of a deep tan-colour, and generally marked with a black spot above each eye.

BLOOD-SPAVIN. See SPAVIN.

BLOOD-LETTING, the act of taking blood by any operation or process, either from a single vein or artery, or from a part of the surface of the body of an animal, where the blood-vessels are too minute to be distinguished. In these respects the term admits of a signification distinct from that of BLEEDING; since the latter

is mostly understood of *venesection merely*, and that in a part generally preferred for evacuating blood from the *system*, whilst the former has in view the production of some *local effect* at the same time.

BLOOD-VESSELS, the general name given by anatomists to that system of vessels by which the blood is distributed to all parts of an animal body (see CIRCULATION). The blood-vessels are membranous tubes of two descriptions; the ARTERIES, which originate in the heart, and the veins, which terminate in it; both by very large trunks. See HEART.

It may be easily understood from what will be observed in the description of the HEART and LUNGS, that the ascending and descending trunks of the *vena cava*, the ascending and descending trunks of the *aorta*, with the pulmonary vein and artery, the *vena portæ* of the liver, and some few others, are the principal and most remarkable of all the blood-vessels; that the arteries carry the blood into all parts from the heart, and that it returns back again in the veins, when it has taken its circuit and progress through the body; therefore it remains only to shew in what manner both the one and the other are distributed, so as to perform that important office, whereby all parts of the animal body have their vital supplies.

The ascending and descending trunks of the *vena cava*, meet so as to open into the right auricle of the heart. The auricle receives all the blood from both the above-mentioned trunks. This fills the right ventricle of the heart in its diastole, and that, by its systole, empties the same blood into the pulmonary artery, which supplies the whole substance of the lungs by innumerable branches: the small capillary branches of the pulmonary vein, take up the blood from the capillary branches of the artery, and these convey all the reflux blood into one pretty large trunk, which opens into the left auricle, and the latter, by its systole or contraction, discharges the blood into the left ventricle, which thrusts it out into the *aorta*. The first *aorta* sends out two small branches to the heart, viz. the *coronarie*, and then rising a little archways, perhaps to lessen the *impetus* or force of the blood, as it immediately rushes from the heart, is divided into its two principal trunks, viz. the ascending and descending.

The ascending trunk of the *aorta*, climbs up by the trachea or windpipe to the upper part of the *thorax*, where it sends off the subclavian arteries in two branches, which run under the clavicles on each side. These send off other

branches, both from their upper and under sides, from their upper sides the cervical arteries, which are partly spent on the muscles of the neck and breast, and partly on the thyroid gland near the windpipe. From the lower side of the subclavian arteries proceed the superior intercostals, which passing through the chest, send forth several branches to the fore leg. Near the part from whence the subclavians go off from the *aorta*, arise two other principal branches, called the *carotid* arteries, which ascend upwards towards the head, where they form the *rete mirabile*, and *plexus choroides* upon the surface of the brain, which are plainly to be seen, and help to supply the brain and its membranes. The carotids also detach several branches to the windpipe, the larynx, and some to the tongue, and lower jaw, and others to the scalp, and external parts of the head. By these four principal branches, *viz.* the subclavian and carotids, the whole head and neck, as also the external parts of the chest and fore legs, are supplied with blood.

The descending trunk of the *aorta*, as it approaches the *diaphragm*, or midriff, sends forth the inferior intercostals that go to the ribs, with the bronchial artery, that accompanies the branches of the windpipe in the lungs, and when it has just passed through the midriff it detaches other branches, *viz.* the *phrenic* arteries, which are dispersed in the midriff and *mediastinum*. From the midriff it reaches downwards as far as the last *vertebra* of the loins, but by the way sends off several branches to the stomach and other intestines, as the *coeliac*, *splenic*, and *upper mesenteric*, and below these the *emulgent* arteries, one on each side, which go to the kidneys; and underneath these, arise also, from the main trunk, the *spermatic* arteries, which go to the testicles. Last of all are the *lower mesenteric*, which, with the *upper mesenteric*, supply the whole mesentery.

After this the *aorta*, reaching the top of the *os sacrum*, is divided into two branches, one on each side, called the *iliacs*, and these are again branched out into the *external* and *internal*. From the latter proceed those called the *muscle*, which are bestowed on the *psoas* muscle, and other muscles of the buttocks, as also the *hypogastric* that run to the *rectum*, the *uterus*, in females, the bladder, *prostates*, and *penis*, in males, and to all the parts contained within the *pelvis*. From the external *iliacs* arise the *epigastrics*, which turning forwards, creep along the rim of the belly, where they meet the mamillary above described. The next are the *pubenda*, which go to the genitals of both sexes, and thereby communicate with the *hypogastrics*. Afterwards

the *iliacs* go to the thighs, and as they pass downward are called the *crural* arteries, supplying the hind legs and feet with many considerable branches.

This being the general distribution of the arteries into the several parts of the HORSE, it is to be observed, that all the branches are divided, and subdivided into smaller branches, like the boughs of a tree, or the *flamina* of plants, by which all the parts of the animal body are overspread with most minute capillary arteries, and these so combined with each other, that when one or more small arteries happen to be obstructed, the blood that is by such obstruction hindered in its passage, is received and taken up into other communicating branches, by which its motion is preserved, and the parts not deprived of their support and nourishment. The same economy is observable in the *veins*, whose capillary vessels take their beginning like so many rills or rivulets, which empty themselves into the larger branches, and these at last into the ascending and descending trunks of the *vena cava*, as into a main river, so that when the capillary veins are divided or obstructed, the communicating branches carry off the blood, so as to prevent any dangerous accumulation, which, by a different arrangement, might easily happen from very slight causes.

But as it is the peculiar province of the arteries to convey the blood from the heart, and distribute it into all parts of the body, so they are perfectly fitted for that purpose by their structure. The arteries have three coats, and the veins the same number (wherein they both agree with most other membranous tubes); but as the impulse of the blood from the heart into the arteries, requires a considerable strength in them more than in the veins, therefore their coats are much thicker, the reason of which will appear by considering the office of the veins, for the capillary veins receive the blood where the arterial impulse is but small, and its motion in the arteries languid, and when the blood upon its return has entered the veins, its motion cannot much increase, as it is received from vessels that are small, and passes into others that are larger; and indeed it could hardly move at all in some places, had not all things been wisely contrived for that purpose, and therefore those who have seen dissections must have observed, that wherever there is any considerable branch of an ascending vein, there is generally a branch of an artery underneath it, or very near it, which by its continual pulsation gives some help to the motion of the venal blood; and sometimes, especially in the limbs, we may observe



two branches of vein accompany a large artery, one on each side, and if it happens the same in many places where the vessels are small, which is no ways improbable, it must be the means greatly to facilitate the return of the blood, not only from the assistance it has from the pulsations of the arteries, but as it is carried off in a great number of canals, besides the muscular action which accelerates the motion of the blood in both, but especially in the veins. But further, the veins, as in the chyle vessels, and *thoracic duct* to be described, have *valves* placed at convenient distances, which all open inwards, for the progress of the blood towards the heart, so that being forwarded in its passage that way, it cannot return back again; and it may also be taken notice, that these *valves* are the most numerous where they are the most wanted, as in the limbs, and other places where the venal blood ascends upwards; being fewer in number, where the course of the blood in the veins diverts sideways, and few or none where it is directly downwards. But we now proceed to describe more particularly the distribution of the veins, the larger of which very nearly agree and correspond with that of the arteries.

As the *aorta* receives the blood from the heart, and disperses it into all parts of the body; so the *cava*, as has been observed, like a main river, receives into it the blood from all parts of the body, proceeding first from vessels exquisitely small and imperceptible, and afterwards uniting in larger branches, empty themselves into its ascending and descending trunks, at proper and convenient distances. The superior or descending *cava*, receives first the coronary vein from the heart, near the place where it opens into the auricle, and before it pierces the *pericardium* or purse of the heart, it receives the *vena sine pari*, which is made by the union of the veins of the ribs, likewise the bronchial veins that accompany the *bronchia* in the lungs.

The next are the *subclavian* and *jugular* veins, which are pretty large, and answer to the *subclavian*, *cervical*, and *jugular* arteries, and are the next of any note, that open into the descending *cava*. These are divided into the external and internal; from the internal is returned the blood from the ventricles of the brain, and into them also, open all the branches of veins that lie among the bars of the mouth, which farriers formerly were fond of drawing blood from, when horses happened to be seized with any sudden disorders which required it; also the *ranular* veins passing under the tongue, and many other branches which communicate with those of the brain. The *external jugulars*,

are those large veins which run the length of the whole neck, one on each side near the *oesophagus*, or gullet; and are usually opened in all cases that require bleeding, these being the largest and safest in the body of a horse. These receive and carry back that portion of blood, which comes from all the external parts of the head and face, *viz.* from the eye, the temple, and the veins of the nose and lips.

The *subclavian veins*, *viz.* the two large veins which pass along by the *subclavian* arteries under the clavicles, not only receive a great part of the blood which enters the chest, but likewise have all those veins open into them, which run along the outward part of the breast, fore legs and feet. The *plate vein*, which opens into the *subclavian*, runs along the inside of the fore leg towards the knee, answering those on a man's arm, and are frequently opened for lameness in the breast or shoulders as well as on other accounts. Below this are the *shank* veins and *shackle* veins, which communicate with the *plate vein*. The *shank* veins are those that run in the hollow, on each side of the back sinew, between it and the shank; and the *shackle* vein is that branch which runs across the back sinew, and communicates with the *shank* veins on each side, under the place where a horse is shakled. But this vein is so very small, that it is scarce ever to be seen or felt, but when a horse happens to be extremely hot, and then we may perceive one or more branches run across the sinew. Sometimes pretty large varices happen in these parts, by which the *shackle* vein appears very plain and visible at all times, and these are attended with great weakness and debility in the limb, till removed by an operation. These, and the *shank* veins, communicate with those of the coronet and toe. Those of the toe are often opened for diseases of the foot (see FOOT), and the veins about the coronet are frequently cut asunder in the cure of quittors, and also in accidents happening to those parts.

The *ascending cava* which runs along by the spines of the back, and carries the blood from all the lower parts upwards to the heart, receives first those branches of veins, which return the blood from most parts of the lower belly, *viz.* the *mesenterice* from the mesentery, the *portæ* from the liver, the *emulgents* from the kidneys, the *spermatic* veins from the parts of generation, and where it is divided, as the descending *aorta* into the internal and external *iliacs*. The first receives branches from the hypogastrics, by which the blood is returned from the uterus, bladder, and rectum, or straight gut; and into the latter, *viz.* the external *iliacs*, open the epi-

gastrics, with branches from the *peritoneum*, and external parts of the lower belly, which the old farriers denominated by different names, as the kidney veins near the loins, the flank and spur veins, which are often wounded by the spurs, the liver veins on the side of the lower belly, which were sometimes opened on a suspicion of diseases in the bowels, and also that of the rump, called the tail vein, which farriers frequently opened, or else scarified the tail, in the STAGGERS, and other disorders affecting the head. The thigh veins, and the crural veins, also enter into the external iliacs and epigastrics, as the shank veins in the fore legs communicate with the subclavians. The thigh vein runs along the inside of the thigh, and is sometimes opened in lameness of the hips, and disorders of the loins and kidneys. The *crural* veins are those on the hind limbs, on each side of the instep, answering to the shank veins, in the fore legs, already described.

A representation is given of the distribution of the arteries and veins in a horse, in Plate IV. of which the following is a description.

In the view of the principal VEINS,

*aa* Is the *vena cava*, which receives the blood from all the other veins, in order to its immediate conveyance into the heart.

*bb* The axillary veins which receive the blood from the fore legs, breast, and belly, &c.

*cc* The veins of the off leg before, which empty themselves immediately into the axillary veins.

*dd* The veins of the left or near leg before, which enter the left branch of the axillary vein.

*ee* The external jugulars, with their several ramifications that return the blood chiefly from the external parts of the head and neck into the *cava*.

*ff* The internal jugular veins that return the blood chiefly from the brain, &c.

*gg* The veins dispersed on the face and cheeks, that empty themselves chiefly into the external jugulars.

*h* The *vena sine pari*, or *azygos*, which opens into the descending trunk of the *cava* before it reaches the heart.

*ii* The coronary vein, with its ramifications upon the heart.

*kk* The veins peculiar to the diaphragm.

*ll* Those peculiar to the liver.

*mm* The veins peculiar to the kidneys.

*n* The junction of the iliac veins in the *cava ascendens*, or ascending *cava*.

*oo* The veins of the testicles.

*pp* The branches of the iliacs that are distributed upon the thighs and hind legs.

*q* The veins of the tail.

*rr* The crural veins that are dispersed on the legs and feet.

*ff* The veins that run along each side of the abdomen. These receive the blood from all the external parts of the belly, and open into the iliacs near the groins.

*Explanation of the arteries, and their distribution in the body of a horse.*

*a* The heart, with its coronary arteries.

*b* The descending trunk of the *aorta* or great artery, taking its course along the spine.

*cc* The subclavian arteries that pass under the clavicles or collar bones, to the fore legs.

*dddd* The superior and inferior cubital arteries that, dispersed along the fore legs and feet, convey the blood for the nourishment of those parts.

*ee* The external carotids that carry the blood upwards to the head, sending out branches as they pass along to the muscular parts of the neck.

*ff* The internal carotid arteries, which also take their course to the brain and other parts of the head, into which they enter by different *foramina* or holes.

*gggg* The most conspicuous branches of the external and internal carotids, as they communicate one with another in the head and upper part of the neck and jaws, and have their different names and denominations from the several places to which they are detached.

*hhhhhh* The intercostal arteries which pass out between the ribs on each side, and are bestowed on all parts of the trunk of the body.

*ii* The arteries that are bestowed on the diaphragm, and likewise on the stomach and other internal parts.

*kk* The arteries that are dispersed on the spleen or melt, the liver, mesentery, and small intestines.

*ll* The arteries bestowed on the kidneys.

*mm* The lumbar arteries that are dispersed on the bladder, intestinum rectum, and other parts within the pelvis.

*nn* The spermatic arteries that go to the testicles.

*oo* The arteries dispersed on the testes.

*pp* The arteries that proceed from the iliacs, and are bestowed on the tail.

*qq* The iliac arteries that branch off into the thighs.

*rr* The crural arteries that are bestowed on the legs and feet.

BLOODY FLUX. See DYSENTERY.



**BLOODY URINE.** See **KIDNEYS**. Mr. JOHN LAWRENCE says, "For **BLOODY URINE**, from falls or bruises, from over-straining at a hard leap, or a hard ran heat in racing, or any other cause; bleed, and give two quarts of milk, or whey, warm, with a gill of peppermint-water, and a strong decoction of two ounces of juniper berries; Irish slate, two drachms; sweeten with honey, or syrup of quinces. If the drink be desired more efficacious, repeat and continue it once a-day, with the addition of one ounce or two of armenian bole in powder; and two drachms to half an ounce of Japan earth.

"Or give the following restraining ball twice a-day;

Take Peruvian bark, half an ounce to one ounce;

Lucatellus's balsam, or

Balsam of Peru, half an ounce;

Irish slate, two drachms;

Elixir of vitriol, one drachm:

Make them in a ball with conserve of red roses, and syrup of poppies.

"Or give a decoction of logwood and oak bark, sweetened with honey: dose one pint."

**BLOOD-RUNNING ITCH**, a vulgar name for a disease of the skin; (see **CUTANEOUS DISEASES**). It is said to be infectious, to resemble the **MANGE**, and sometimes to terminate in it. Sudden exposure to cold, or the drinking largely of cold water, when a horse is heated with violent exercise, are observed to be the most common causes of this complaint, the cure of which is usually attempted by ointments containing sulphur, mercury, &c. externally; whilst, internally, a course of **ALTERATIVES**, with the exhibition occasionally of **PURGING BALLS**, are had recourse to.

**BLOOD-SHOT**, a popular term for that red appearance which the eye exhibits when inflamed; or when the red globules of the blood pass into those vessels which usually carry lymph.

**BLOOD-STICK**, a short stick, used in bleeding a horse, to strike the **FLEAM**, so as to make it penetrate at once into the vein. See **BLEEDING**.

**BLOSSOM**, in general, signifies the flower of a plant. It is also applied to the flowering of trees in the spring, called their bloom. The use of the blossom to the vegetable is, partly to protect, and partly to draw nourishment for the embryo fruit or seed.

Blossom is also a term applied to a horse, whose general colour is white, but interspersed with sorrel and bay hairs. Dr. Willich, in his "*Domestic Encyclopædia*," says, such horses are so insensible and hard, both in the mouth and flank,

that they are scarcely of any value; and are likewise very liable to turn blind.

**BLOW**, a kind of injury produced by mechanical violence, applied to an animal. The effect of a blow is a bruise (see **BRUISE**); and according to the severity of it, and the importance and degree of sensibility of the part on which it falls, will be the extent of the mischief.

The disorganization or derangement of parts that have sustained a blow produces more or less inflammation, which is to be remedied in the different ways pointed out under **INFLAMMATION**, **WOUND**, &c.

Horses and other animals are very liable to blows upon the eyes, or eye-lids; and yet these are seldom so dangerous as might be apprehended: for sometimes an accident of this kind will cause great inflammation, and even make the horny coat of the eye turn white, and yet it will come to itself in a few days, only by bathing it with cold spring water, by the help of a sponge, four or five times a-day, and especially if blood be drawn from any neighbouring vessel.

If, however, the eye should become much swelled or inflamed, it will be proper to bleed the animal, and bathe with a warm decoction of poppy heads, or with some cooling eye-water. See **EYE**.

For the remedies necessary in injuries of other parts from blows, see **BRUISE**.

**BLUE-STONE**, a popular name for the *vitriolated copper*, or Roman vitriol, of the shops. See **CUPRUM VITRIOLATUM**.

**BOAR**. A horse is said to *boar*, when he shoots out his nose as high as his ears, and tosses his nose in the wind. See the article **WIND**.

**BODY**, an indeterminate name given to that part of an animal which contains the principal viscera and organs of life. "The common appellation of this part, amongst horsemen," as Mr. Robert Lawrence observes, when speaking of the *External conformation of the Horse*, "is the *carcase*. Thus a horse is said to be long or short in the *carcase*. A horse which is short in the *carcase*, is usually '*ribbed home*,' as it is termed, that is to say, there exists but a small space between the last rib and the hip bone. This conformation is justly esteemed excellent. A horse thus formed is generally short in the back and wide in his loins, and better adapted to carry weight and bear fatigue than a horse of a different form.

"Horses of this description, however, are commonly supposed to be deficient in speed, from the idea that they have not sufficient length. But when it is considered that the trunk or body has no motion of itself, but is

entirely acted upon by the quarters and extremities of the animal, it is manifest that the length should exist in these parts, and not in the body. In proof of this, two horses may be found exactly of the same length from the point of the shoulder, at the chest, to the point of the buttock, and yet one horse shall be long in the carcase, and the other short."

Mr. Lawrence illustrates this by beautiful engravings, which the intelligent reader will do well to consult, in his "*Enquiry into the Structure and animal Economy of the Horse.*"

He accounts for the difference, which, he says, consists in the one having longer quarters than the other, and this, he observes, is undoubtedly the form to be preferred.

"The fore part of the carcase," continues the author, "contains the heart and lungs, and should therefore be sufficiently capacious to admit of a free action in those viscera. Horses with flat ribs experience a greater pressure from the atmosphere in their breathing than those do which have their ribs more arched, consequently they are not so well adapted for respiration. The posterior part of the carcase contains the stomach and intestines, and is generally round and capacious in horses of a strong constitution. The back should sink in a small degree behind the withers, and proceed in a straight line to the end of the loins, and thence fall gradually to the tail. A hollow back renders the motion of the animal easier to the rider, but certainly cannot be so strong as one that is straight. A roach or hog back constantly throws the saddle forwards on the shoulders"—a circumstance productive of great inconvenience to the rider.

"The loins should be wide, and the hips low. The distance of the point of the buttock from the hip should be considerable. The lower part of the buttocks, in a posterior point of view, should be wider than the hips. The tail should issue from the croupe in a regular progressive curve, and not appear as if it was stuck into the rump.

"The hinder quarters may properly be considered as the main spring of the whole machine. This is clearly demonstrated by the superior size of the muscles, and the angular position of the thigh bones."

Mr. Lawrence here observes on what we certainly think a common error. He says, "It has generally been the custom to attribute the source of motion principally to the fore quarters, under the idea, that if the fore quarters could move well and with speed, the hinder quarters must naturally follow. The fallacy of this doctrine may be easily exposed. In the action of a self-

moving body, the posterior part generally constitutes the fixed point from whence the motion takes its origin. Thus, if the horse leans forwards, the centre of gravity ceases to be supported, and he is obliged to advance one of his fore legs in order to recover the equilibrium. Again, if the chief source of motion exist in the fore quarters, whence does it arise that many good fore-quartered horses are bad leapers? The reason is obvious: from weakness in their hinder quarters; for the principal strength of a horse lies in the muscles of his thighs. Therefore a horse may rise well at a leap, and clear it with his fore legs, but cannot bring his hinder legs over, unless the muscles of his thighs are sufficiently powerful.

"It may be urged, that leaping differs from galloping; but galloping is, in reality, constituted by reiterated leaps on a plane surface. Hence the necessity of a good conformation in the hinder quarters."

Of this doctrine Mr. Lawrence adduces a strong instance in the celebrated horse ECLIPSE, unquestionably the most speedy horse of his day; for it seems his fore quarters were very ill formed, and his shoulder low; but his hinder quarters were furnished with strong muscles.

BOG-SPAVIN. See the article SPAVIN.

BOLE. Boles are a genus of earths, which readily fall down into a loose mass in water; having a degree of ductility, when not pervaded with too much water; and smooth and rather unctuous to the touch. Thus are they described in Edwards's *Elements of Fossilogy*.

FRENCH BOLE, *bolus Gallicus*, is a friable earthy substance of the argillaceous kind, intimately blended with a slight portion of ferruginous calx, or calcareous earth. It is of a pale red colour, variegated with irregular specks, and veins of a whitish yellow. It is said to imbibe sharp acrid humours, and hence has been recommended in alvine fluxes, and acidities, in doses of from one to three ounces. Pipe-clay, coloured with red chalk, is often its substitute.

There are various other species; but it is unnecessary to describe them, as they are not allowed to possess any medical virtues.

BOLETUS (from *βωλος*, a mass). SPUNK. A genus of the fungusses. It is an horizontal fungus; and porous underneath. The BOLETUS IGNIARIUS, commonly called AGARIC of the OAK.

BOLSTERS, in horsemanship, those parts of a great saddle, which are raised on the bows both before and behind, to rest the rider's thighs, and keep him in a posture to withstand the irregular motions of the horse. Common.



saddles have no bolsters. The expression of fitting a bolster, according to GUILLET, is used when they put the cork of the saddle into the bolster to keep it tight. That part of the saddle being formerly made of cork, first took this name, though now it is made of wood. In modern horsemanship, however, bolsters are seldom resorted to.

**BOLUS** (from *βωλος*, a mass, from the Hebrew term *balah*, to agglutinate), a well-known form in which doses are administered. *Boluses* differ not from electuaries, only they are made rather of firmer consistence, in single doses, and therefore more proper where great exactness is required in the administration, and where the speedily perishing drugs are to be used, for they are only made for immediate use. Many of the ponderous powders may more conveniently be mixed with mucilage, for so they are the least bulky. The quantity of it is as much as can be conveniently swallowed at once.

**BONES**, the hardest of all the parts of an animal body. They are insensible of pain, as are also the tendons, and cartilages, connected with them, except when in a state of inflammation. They are the grand supporters of the whole animal fabric, to which they also give shape, and furnish levers for the muscles to act upon, being connected together by many joints for the convenience of motion. We shall here give a short description of the bones of a horse, with the ligaments and cartilages. See Pl. V.

The first that naturally offer to be described are the bones of the head, which, including those peculiar to the skull, and those that are common to it and the upper jaw, are reckoned seventeen in number. But we shall chiefly take notice of those that are the most observable and plain to be seen. The head has first of all the frontal or forehead bone which makes the brow, and in colts and almost all other young animals is divided by a *suture* or seam down the middle, which in time totally wears out. The two side bones, called the *parietal* or walls, are divided by a seam which reaches along the middle of the head from the forehead to the *occipital* or noll bone. These are small in a horse in proportion to what they are in man, because the greatest bulk of a horse's head lies forward. All the bones of the head are joined together by sutures or seams indented into each other, which is the only way by which bones of that figure could be united, so as to answer all the functions of the head and brain. Besides these principal bones there are the *temporal* bones, which are not indented as the other, but are joined to each side by apposition, and are fixed by a gelatinous

cement to the circumambient bones of the head. They are thick and very hard in their middle and lower part, but grow thinner especially round their upper edges. The bones common to the head and upper jaw, are the *cunifforme* or wedge-like bone, the yoke-like bone, and the *os cribri-forme* or sieve-like bone. The other eight that make up the number seventeen belong to the ear. They form the organ of hearing, and lie within the temporal bones, *viz.* four on each side.

Several blood-vessels pass through the futures of the skull, by which the blood has its egress and regrefs from the brain to the external parts of the head, and from thence back to the brain. And besides these, there are holes and perforations in many parts of the substance of the skull, for other vessels that spread themselves both externally and internally over the head and brain; and particularly five very distinct ones in the *occiput*, besides its great perforation towards its bottom, by which the spinal marrow passes downwards through the vertebræ of the spine. There are also many foramina through the *os cribri-forme*, towards the nose and the larger emunctories, for the passage of several nerves and blood-vessels; with others towards the eyes and ears.

On the inside of the skull, are several impressions or furrows made by the larger vessels of the *dura mater*, or uppermost membrane of the brain, which vessels form these traces in the fœtus before the skull acquires its hardness. The inside of the skull has also, in many other places, inequalities answering to the form of the cortical part of the brain, whereby the *cranium* becomes a proper helmet of defence for the brain.

With respect to the accretion and growth of the bones of the skull, they begin always to ossify towards their middle or most projecting part, and so extend that hardness by degrees to the edges, where they are joined and indented into one another. This kind of mechanism prevents the ill consequence of many accidents to which all young animals are exposed. But afterwards the bones of a horse's head grow so extremely hard, that no common force is able to part them asunder. The diploe or middle substance between the two plates of the skull, is scarce to be found in adult or full-aged horses, for both its tablatures seem to be united into one, except over the eyes, on the lower part of the frontal bone, or on the inside where there are large sinuses, by which means a horse's brain is well fenced against the effects of blows and other accidents. But towards the nose the bones are more spongy, and made up of several carti-

lages which are very tender and sensible; and we often observe brutish people, in their passion, beat their horses over the nose, as the surest way to give them pain, and rouse them when they happen to be dull or obstinate.

The *cuneiforme*, or wedge-like bone, is joined before to the frontal or forehead bone, and behind to the lower part of the *occipital* bone, and so makes the bottom or basis of the skull like a wedge between it and the upper jaw. It has perforations which give passage to the carotid artery and jugular vein, &c. the principal blood-vessels belonging to the head. The *os cribiforme* or sieve-like bone, already mentioned, gives a passage to several blood-vessels and nerves; some to the nose, some to the eyes, and some to the ears, contributing to the senses of seeing, hearing, and smelling. It also divides the nostrils, and has several cavities filled with spongy flesh.

The *superior maxillary*, or upper jaw bone, is joined to these, and has a little process that passes to the lower part of the orbit of the eye, which forms part of that orbit. The cheek bone, which is also part of the upper jaw, has a very large sinus or hollow below the eye, on each side, which in a horse is divided by four bony partitions that open into the nose; there is also a little hole on each side, through each of which an excretory duct passes, to carry off the superfluous moisture from the lachrymal glands, situated on the inner corners of the eyes. On the lower part are the *alveoli* or sockets for the teeth, which, including the tusks, are twenty in number, *viz.* six fore teeth and twelve double teeth backwards, called the grinders, *viz.* six on each side.

The lower jaw differs from the upper in that it is moveable, being joined and articulated into the sinuses of the lower part of the temporal bone. In young animals it is divided between the fore-teeth, so as that the bones may be easily parted asunder. On its lower edge it is round and smooth, and hollow within, containing several cells filled with medullary substance. Through it are several holes, and under the teeth, apertures for the passage of nerves and blood-vessels. The middle or flat part is more solid, and along the inner edge are the *alveoli* or sockets for the teeth, which are the same as in the upper jaw, *viz.* six forward, two tusks, and six on each side backward, making in all, above and below, forty in number.

The bone which is attached to the tongue is called the *os hyoides*, from the resemblance it has to the Greek letter *u*. It has its proper muscles,

which take their rise from, or are inserted into it; besides others that go to the palate and larynx, which also have their origins from this bone.

The *vertebræ* come next to be described: the neck has seven *vertebræ*, the back seventeen; the loins consist of seven, the croup six, and the rump or tail eighteen.

The *vertebræ* of the neck have their spines round and smooth, with a hollowiness between them on each side for the muscles and ligaments which fill up their cavities; the uppermost has a process that is received by the second, upon which the head turns from side to side like a door upon its hinges, and yet is so fixed to the head by muscles and ligaments, that it cannot go beyond its limits. The seventeen *vertebræ* or joints of the back are different from those of the neck, having their spines very high, especially on the withers, which rise archwise, and are like a palisade or rail. These spines are pretty solid in the middle, and of a contexture like the ribs, only that their tops are broad, soft, and spongy, covered with a very smooth and strong ligament to keep them united, and preserve the back from being bruised. Below and beyond the withers, and along the seat, the spines are shorter and of equal height, till they approach towards the loins where they rise higher, especially in *roach-backed* horses, but behind they are more level as they descend towards the rump. Every one of these bones, from the first *vertebra* of the neck to the last of the loins, has a large central perforation for the spinal marrow, which issues from the brain, and passes along towards the rump, where it ends. The bones of the tail are eighteen in number. They have no medulla within them as above described, and therefore are not perforated. They are soft and spongy, and more loosely connected by soft and yielding cartilages, so that they may be easily separated and curtailed in any part without danger. They are large towards the rump and short, but grow gradually smaller and longer till they end in a point.

The *clavicles*, or collar bones, are two in number, in the shape of an italic *s*, *viz.* one on each side. By one end they are united to the uppermost *vertebræ*, and by the other to the upper part of the sternum or breast bone, whereas those in men are joined to the shoulder, and assisted in their motion by a particular mechanism, which we need not here describe, but in a horse they are of use to support the shoulder blades, and keep them from sliding forwards.

The *ribs*, in all thirty-four in number, are



distinguished by the true and false. The true are the uppermost nine on each side, which are also joined to the vertebræ of the back, and to the breast bone, incompassing the whole upper cavity. The breast bone in a horse, and many other quadrupeds, is shaped somewhat like the bottom of a ship. It is at first spongy, but in time grows pretty hard, and has along its two sides cartilaginous dents or impressions, where it receives the ends of the true ribs. The part which reaches towards the pit of the stomach, is called the *cartilago ensiformis*, or sword-like cartilage, having a point resembling that of a sword. The false ribs are in number eight on each side. They are not so strong and rigid as the true ribs, and grow shorter as they approach towards the loins, leaving an opening for the stomach and belly. The shape of a horse's belly depends much upon the length or shortness of these ribs; for the larger they are in compass, a horse looks the more round, and when they are very short, such horses can never carry a good belly. All the ribs are thick and strong towards the back, but towards the brisket and belly they are thin and flat; by which they are endowed with a kind of elasticity, which enables them to dilate and contract in respiration, and some think, when they are well proportioned, they add considerably to the goodness of a horse's wind. All the ribs on their inside are exquisitely smooth, and covered with the *pleura*, a membrane resembling the finest satin, so that the lungs and other viscera, may not be hurt by contact with them.

The *scapula*, or shoulder-blade bone, lies, like a shield, from below the withers, to the point of the *os humeri*, or shoulder bone, which bone turns backwards to the elbow, forming an angle. The blade has a high spine or ridge along its middle on the outside, and is joined to the ribs by its muscles, which have very strong tendons. The lower end has a slender cavity which receives the round head of the shoulder bone, and because of its shallowness is environed with a very tough cartilaginous substance, and covered over with a broad and very strong ligament like a purse, which not only prevents the round head of the shoulder bone from slipping out, but affords the shoulder an easy play, and adapts it to all its necessary motions.

The shoulder bone in a horse, and most other quadrupeds, is very short from the shoulder to the elbow, where it is joined to the *cubitus*, or fore leg, by strong ligaments. It has at its lower end two processes, and on the hinder and upper part of the leg bone is a high thin process, which

enters between these two processes, and makes the elbow joint. The high thin process forms the point of the elbow, and as it rises higher than the articulation of the joint, prevents the leg turning backwards by a counter motion.

The *leg* bone is joined at the knee to the shank, which bones receive, and are received into, one another. This joint has two ranges of little bones within the bending of the knee, *viz.* three in the first range, and four in the second, that not only strengthen that joint, which could have no stability without them, but render its motions (which consist only of flexion and extension) more safe and easy. These are connected together by ligaments that are partly tendinous and partly cartilaginous.

The *shank* is that bone which reaches from the knee to the great pastern. It is composed of three bones, one large, the other two resemble bodkins, being thick and roundish upwards, but small downwards. The great pastern has three small processes, which are received into three cavities of the shank bone, and two cavities which receive two processes of the same bone, and has two small triangular bones fastened to its back part, which form the fetlock, and are also like a stay to preserve the joint from false motions, which would very much strain the ligaments. The little pastern is joined to the great pastern in so curious a manner, that to the eye both seem to be but one. By this juncture the pasterns yield and give way, when a horse is pressed with a great weight upon his back, which otherwise by their position would be apt to break. The lower end of the lesser pastern is articulated, and joined to the coffin bone by two heads, and to the upper or great pastern in the same manner as it is received into the coffin bone. The bones of the foot, however, will be described under the article Foot.

The bones which form the hind parts of a horse, are the *ossa innominata*, divided into the hip, haunch, and share bones. The first is the *os ilium*, so called from the gut ilium that lies under it. The second is the *pubis*, which makes a small arch at the extremity of the lower belly, through which the penis passes, at the entrance of which is the neck of the bladder. The third is called the *ischium*, and has on each side a large round cavity, which receives the round head of the thigh bone. These bones are joined, on their posterior or upper part, to the *os sacrum*, by cartilages, which in time grow so hard, that they can scarce be separated. The *os sacrum* is the bone that lies under the crupper next the rump, and this, with the *ossa innomi-*

nata, form the *pelvis*. It is also joined to the lowest of the lumbar vertebræ, and with the uppermost bone of the rump.

The *thigh* bone reaches from the hip to the stifle. Its upper head is round and somewhat longish, that it may the better fill up the acetabulum, or cup of the hip bone, and as it turns backwards and forwards within this cup or cavity, upon the alternate motions of a horse's leg, it is therefore, in common phrase, called the whirl-bone. The lower end of this bone has two processes like a pulley, between which is a large space that receives the protuberance of the leg bone, which is the bone that reaches from the stifle to the hock: there is a middle space pretty large and deep between these two bones, where they join, that receives the under side of the stifle bone, which is the knee-pan of a horse.

The *patella*, or stifle bone, is prominent on the outside with some asperities for the insertion of the muscles of the thigh, and on its inside curved and smooth, exactly answering to fill up the space between the two bones above described. It is kept in its place by a strong ligament, that rises from the upper end of the bone of the leg, and is inserted into its lower end below its middle; by the tendons of the muscles of the thigh, which are inserted into its upper end; and by a broad, strong, ligamentous substance, which is expanded all over it, so that it cannot be dislocated without the most violent force, neither can it be so readily fractured as a man's knee-pan, because of its convex form. It is very strong and solid, like a piece of flint, has no cavity within, and is but very little porous, circumstances which render it the more fit for its destined uses.

The small bones of the *hock*, are in number the same with those of the knee, *viz.* three in the first range, and four in the second; they are also articulated with the instep, as those in the knee are with the shank. By their extreme smoothness, they facilitate the motion of the joint, preserve the horse's legs from doubling under him when he is put upon his haunches, and give a kind of spring in vaulting, leaping, or any other forcible action of the hind-legs.

The *instep* is made up of three bones, so closely united, that they seem to be but one, and cannot be easily separated; much in the same manner as the shank bone already described. The pasterns and coffin bone agree also in every respect with those of the fore feet; but of these, with the form of the Hoof, &c. we shall speak under the article Foot.

We shall conclude this general account of the

bones with observing, that all the long bones, such as the shoulder and thigh bones, the bones of the leg, of the shank and instep, are hollow, and tubular, and contain a substance called marrow, which serves instead of oil, to keep them from growing too hard and brittle. Towards their extremities, however, they are imperforated, but their substance is spongy, and their interstices, when cut, appear bloody, especially in young animals, which is a provision of nature against their being broke very near to the joints, which would almost always produce incurable lameness. Over each end they have an epiphysis, covered with an insensible cartilage or gristle, calculated to make their actions smooth, so that their motions may induce no pain. The larger joints, such as the shoulder, the hip, and the stifle, have not only very strong ligaments, of various contrivance, to keep them in their places, as has been observed, but they also have glands that separate *synovia*, an oily matter, which continually preserves them moist, otherwise they would soon grow dry, and wear with their frequent friction upon one another. All the bones have holes or perforations more or less, for the passage of nerves and blood-vessels; and in several places, besides their common processes and protuberances, little asperities and roughnesses, for the origin and insertion of muscles, which are so situated, as not only to add the greatest beauty, but to be the most subservient to their various motions.

Where no motion, or but little motion, is intended, the bones are connected in a more compact manner, as in the bones of the head, the vertebræ of the back and loins, the os sacrum, and bones of the hips. Yet all these junctures are useful and necessary, and contrived with great wisdom, as may be particularly instanced in the futures of the head, by which no fissure or cleft can run quite across, but must terminate at one of these. The vertebræ, or joints of the neck, having no sharp spines, but somewhat resembling the links of a chain, are admirably fitted to give a beautiful turn to the neck, and to render all the necessary motions of the head practicable. The vertebræ of the back, are also so connected together with yielding cartilages, as to admit of all necessary flexure, yet, at the same time, they are so confined by their spines and processes, and by antagonist muscles, that they cannot be distorted beyond their proper limits. If these were altogether without motion, it is evident, the whole body must also, in a great measure, be immovable. On the other hand, the bones of the hips, with the os sacrum, are joined in so compact a man-



ner, as shews them to have a very limited degree of motion in themselves, but they are so placed as to give the greater certainty to the motions of the hind legs; and the compactness of the vertebræ between the shoulders and the anterior portion of the spine, has the same effect on the fore legs; so that there is nothing wanting in the skeleton, to render all the actions of a horse complete and harmonious.

In Plate V. we have given a view of the skeleton of the horse, for which we are indebted to the elegant and accurate delineations of Mr. STUBBS. To that and the plates annexed to the articles OSTEOLOGY and SKELETON, we refer for all the information that can be required as to the bones of the horse. It must be remembered that, with a view of making the subject more familiar to those who are in any way conversant with human anatomy (on which that of brutes is necessarily founded), Mr. Stubbs has adapted his anatomical language, in all instances, to that situation in which the human body lies when undergoing dissection, namely on the back. Hence he speaks of the *upper* and *lower* extremities in the horse, as in a man; though some comparative anatomists rather choose to speak, more technically, of the *anterior* and *posterior* extremities: but the difference, when the point is once settled, is wholly immaterial.

#### *Bones in the head.*

*aaaab c d e f g* The os frontis, or forehead bone; *b* a small hole which transmits an artery and nerve out of the orbit to the frontal muscle; *c* a future which joins the frontal bone with the zygomatic, or jugal process of the temporal bone; *d e* the coronal future; *d* a squamose, or scale-like future; *e* the part of it which makes a serrated or true future, common to the frontal bone with the parietal bone; *f* a future common to the frontal and nasal bones; *g* a future common to this bone with the os unguis.

*h i k* The vertical, or parietal bone; *i* a squamose future, common to the parietal bone with the temporal bone; *k* the lambdoid future, common to the parietal bone, with the occipital bone.

*l m n o p p q* The occipital bone; *l* the occipital protuberance, which in this animal is very large, together with the internal spine, or protuberance, which, directly opposite to this, makes a strong body of bone in this place; betwixt *m* and *n* is a future, which, in young horses, is easily separated, but afterwards becomes firmly united; *o* a process which makes a considerable addition to the mammillary process of the temporal bone;

*p* the condyloid process, which is incrustated with a smooth cartilage.

*r s s t u v w x* Os temporis, or temporal bone; *r* the zygomatic, or jugal process of the temporal bone; *t* the part which articulates with the lower jaw bone; *u v* a part which, in young horses, may be easily divided, but afterwards becomes firmly united; it is distinguished by the name of os petrosa; or apophysis petrosa; *u* the mammillary process; *w* the bony meatus, or entrance of the ear; *x* a future common to the cheek bone, with the zygomatic process of the temporal bone.

*y z* The orbitary portion of the bone of the palate; *y* a future common to it with the os frontis; *z* a future common to it with the upper jaw bone.

*1 2 3 4 5 6* Os unguis; *1* a small protuberance or roughness from whence arises the orbicular muscle of the eye-lid; *2* a sinus or cavity belonging to the nasal canal; *3* a future common to this bone with the cheek bone; *4* a future common to this bone with the bone of the nose; *5* a future common to this bone with the bone of the forehead; *6* a future common to this bone with the upper jaw bone.

*7 8 9 10* Os jugale, or cheek bone; *8 9* a future formed by the union of this bone with the upper jaw bone; *10* a future formed by the union of the orbitary part of this bone with the os unguis.

*11 11 12 13 14 15* Os maxillæ superioris, or the upper jaw bone; *12* the foramen or hole of the channel which passes along the bottom of the orbit of the eye; *13* a future common to this bone with the bone of the nose; *14* a future common to the anterior part of this bone *15*, and the posterior part *11 12 13*.

*16* Os nasi.

*17 17 17 17 18 19 19 20* The lower mandible or jaw bone; at *17 17 17 17* are marked roughnesses, from which arise the tendinous parts of the masseter; *18* a hole out of which passes a nerve of the fifth pair and blood-vessels to the chin; *19 19* the coronal or acute process; *20* its condyle or head that is joined with the temporal bone.

*21* A moveable cartilaginous plate which is interposed in the articulation of the lower jaw.

#### *The vertebræ of the neck.*

*A Æ E a b b c d e* The atlas or uppermost vertebra; *A Æ* the posterior and superior part of the left side of this vertebra, which articulates with the condyloid process of the occipital bone; *A* the anterior and superior part of the right

side of the atlas, which articulates with the occipital bone as a large tubercle on the anterior part of this vertebra; *bb* the transverse processes; *c* the protuberance, tubercle, or inequality on the posterior part of this vertebra, which seems to be in the place of a spinal apophysis; *d* the posterior and inferior part of the right side of this vertebra, which articulates with the second vertebra; *e* the transverse hole through which a nerve and blood-vessels pass. *N.B.* This vertebra receives the articulating part of the occipital bone, as well as the superior articulating part of the second vertebra: the rest of the vertebrae in the inferior articulating parts of their bodies receive the superior articulating parts of the vertebrae below, and have their superior articulating parts received by those above, so it is with the back and loins; *E* the superior and posterior holes.

*fgbiklmn* 12 The epistrophæus or second vertebra of the neck; *f* the inferior part of the body which receives and is sustained by the third vertebra of the neck; *g* the superior part of its body, which is received by and sustains the atlas or first vertebra of the neck; *h* the anterior protuberance of the body of this vertebra; *i* the transverse process; *k* the spinal process; *l* the lower oblique process on the right side, which is covered with a smooth cartilage within the dotted lines; *m* the lower oblique process on the left side; at 1 is a hole where the vertebral artery goes in and comes out at 2, called the transverse hole.

*opqrstuwx* The third vertebra of the neck; *o* the anterior protuberance of the body of this vertebra; *p* is the superior part of the body of this vertebra, which is received into the inferior part of the body of the second vertebra; and *q* is the inferior which receives the superior part of the body of the fourth vertebra; *r* the transverse process; *s* the right upper oblique process; *t* the right lower oblique process; *u* the spinal process; *w* the transverse holes through which the vertebral arteries and veins of the neck pass; *x* the left upper oblique process; *y* the left lower oblique process seen through the large foramen or hole which contains the medulla spinalis, or spinal marrow.

*N.B.* This explanation may serve for the fourth, fifth, sixth, and seventh vertebrae of the neck; only that the anterior protuberance is wanting in the sixth; but instead of that there is a process on each side which is obliquely placed a little more anteriorly than the transverse process, but ascends obliquely outwards to join with it; it is marked *z*.

*Continuation of the bones of the spine from the neck.*

*1 a b c d e f G* The first or uppermost vertebra of the back; *a* the body; *b* the transverse process; *c* the upper oblique process; *d* the lower oblique process; *e* the spinal process; *f* the lower oblique process of the left side, seen through the large hole which contains the medulla spinalis; *G* the ligament interposed betwixt the bodies of the first and second vertebra of the back.

2 5 6 7 8 9 10 11 12 13 14 15 16 17 18 The vertebrae below the 1st, to the letters of which the explanation of the first will answer.

*ABCDEF* The six vertebrae of the loins; the explanation of the first vertebra of the back will answer to the vertebrae of the loins.

*ggghiiiiikkllmmmm* The os sacrum or great bone of the spine; *ggg* the anterior part or body of this bone, which, in young animals, is divided into as many bodies as there are spines in this bone, it being then like five vertebrae, whose transverse processes make the unequal rough part *b* of this bone; *iiii* the five spines; *kkk* three inferior and anterior holes, which transmit the nerves on each side; *lll* posterior foramina or holes; these foramina, both anterior and posterior, answer to the foramina through which are seen, in this table, the oblique processes of the left side of the vertebrae both of the neck, back, and loins; the transverse processes of this bone being joined, make two holes, one anterior, the other posterior, of which there is but one in the neck, &c. the transverse processes not being joined; *mmmm* the parts of this bone made by the union of those parts which were oblique processes when it was divided into five vertebrae.

*nopq* The first bone of the coccyx or tail; *n* the body, *o* the transverse process, *p* the upper oblique process, which articulates with the os sacrum; there is no lower oblique process; *q* the spine; *r* the ligament interposed betwixt the bodies of the first and second bone of the tail, tying them together.

The same letters on the rest of the bones of the tail will answer to the explanation of the first, only it is to be observed, that there is but little appearance of any protuberating parts after four or five of the uppermost; and in the second the uppermost oblique process forms no articulation with the first, there being no lower oblique process, on any other of these bones as observed before; the spinal process of the second bone of the tail is double, arising from the sides



of the spinal channel, but not rising high enough to meet over the medulla spinalis as those of the first do; it makes two small processes: these protuberating parts diminish so fast that after the fifth or sixth bone they almost disappear, and the bones below are of an oblong figure thickest towards their extremities.

There are 18 bones in the tail.

*Bones in the thorax and shoulder-blades.*

*aaaaab* The sternum or breast bone, of which the parts *aaaaa* are bony, the rest, *b*, is chiefly cartilaginous, or ligamentous, by which the bony parts are connected together.

*1 cde* The first rib; *c* the head by which it is articulated with the transverse process of the first or uppermost vertebra of the back; *d* the anterior or former part of the said head which is connected to the bodies of the seventh vertebra of the neck and first of the back; *e* the cartilaginous end by which it is continued to the sternum.

This explanation will serve for the rest of the ribs, but it is to be observed, that the eight superior ribs only are connected to the sternum, the others are called false ribs.

*1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18* Shew the external side of the ribs on the right side, and internal on the left side.

*fg* The inner side of the left scapula or shoulder-blade.

*hikllmmnnopq* The right scapula; *b* its neck; *i* its spine; *k* the coracoid apophysis, or epiphysis; *ll* its inferior costa; *mm* its superior costa; *nn* its basis; *o* fossa sub-spinalis; *p* fossa supra-spinalis; *q* a cartilaginous continuation of the scapula.

*Bones in the right upper limb.*

*abcdefghikKlm* The humerus or bone of the arm; *b* denotes a protuberance into which the teres minor is inserted; *cdefgh* the upper head; *cde* three protuberances which form two sinuses or grooves which are pretty deep and incrustated with a smooth cartilage; they serve to confine the heads of the biceps muscle from slipping sideways; but by their smooth cartilaginous incrustation they suffer them to slide easily up and down; the heads of this muscle are united over the middle protuberance *d*, and the place of their union is covered with fleshy fibres: *h* the part of the head which is joined to the cavity of the scapula, covered with a smooth cartilaginous crust; *i* the external condyle of the lower head; *kK* the

head covered with a smooth cartilage with which the radius is articulated; *K* the double articular eminence; *l* the anterior fossula or sinus that receives the upper head of the radius when the cubit is bent as much as it can be; *m* the posterior sinus which receives the olecranon of the ulna when the cubit is extended as much as it can be.

*nopqr* The radius; *no* the upper head; *o* a protuberance into which the tendon of the biceps muscle of the arm and brachialis are inserted; *pqr* the lower head of this bone; *p* denotes a sinus or groove through which goes the tendon of the extensor carpi radialis; *q* a sinus through which goes the tendon of the extensor digitorum communis; *r* a sinus through which goes the tendon which is analogous to the tendon of the extensor minimi digiti.

*sttuu* The ulna; *s* the olecranon or elbow; *tt* the part which articulates with the humerus; *uu* the lower part, which is very small, and in aged horses becomes one bone with the radius.

*wxyz 23* The bones of the carpus; *w* os scaphoides or navicularc; *x* os lunare; *y* os cuneiforme; *z* os pisiforme or orbiculare: (the bone called tarpezium, which articulates with the thumb, is not in the horse; and the bone which lies next it, called the trapezoid, cubical, or least of the multangular bones of the wrist, is not seen on this limb in this plate; but on the left upper limb in this plate is marked *1*): *2* os magnum or the great round-headed bone of the wrist; *3* the unciform or hook-like bone of the wrist.

*4 5 6 7* The metacarpal bones in this animal called the shank bones, of which that marked *4 5* is equal to two of the metacarpal bones joined together, viz. that of the middle finger, and that of the ring finger; *4* the upper head by which it articulates with the carpus; *5* the lower head, in this place incrustated with a smooth cartilage; *6 7* an imperfect metacarpal bone in the place of that in the human skeleton which belongs to the little finger; *6* the upper head by which it articulates with the unciform bone of the carpus; *7* the lower head, which is very small, and (the bones of the little finger being wanting) forms no articulation.

*10 11* Two bones which are always to be found in this joint; such bones are called sesamoid bones in the human skeleton, and are frequently found in the first joints of the index and little finger, and in the joints of the thumb; they serve to throw the bending tendons further from the centre of motion in this joint, and form a proper groove for them to slide in.

12 13 A bone which is equal to the bones of the phalanges of the middle and ring finger in the human skeleton; in a horse this is called the great pastern.

14 15 The bone of the second phalanx of the fingers, or the little pastern or coronary bone.

16 The bone of the third phalanx, in a horse called the coffin bone.

17 A sesamoid bone lying over the posterior part of the articulation of the coffin bone with the coronary bone, or the two last phalanges of the fingers.

*In the left upper limb.*

*cde* The os humeri; *cde* three protuberances which form two sinuses or grooves, which are pretty deep and incrustated with a smooth cartilage.

*op* The radius; *o* a protuberance in the upper head into which the biceps muscle of the arm and brachialis internus are inserted; *p* denotes a sinus or groove in the lower head in which the tendon of the extensor carpi radialis lies.

*uu* A small part of the ulna, which, in aged horses, becomes one bone with the radius, but in young ones is joined to it by ligaments.

*wxz 1 2* The bones of the carpus; *w* os sphenoides or naviculare; *x* os lunare; *z* os pisiforme or orbiculare; *1* os trapezium; *2* os magnum, or the great round-headed bone of the wrist.

4 5 8 9 The shank or metacarpal bones; 4 5 is equal to the metacarpal bones of the middle and ring fingers joined together; 4 the head by which it articulates with the bones of the carpus; 5 the lower head incrustated with a smooth cartilage; 8 9 an imperfect metacarpal bone in the place of that which belongs to the fore finger in the human skeleton; 8 the upper head by which it articulates with the trapezoid bone of the carpus; 9 the lower head which is very small, and the bones of the fore finger being wanting, it forms no articulation.

10 11 12 13 14 15 16 17 The three bones of the finger, or the great pastern; the little pastern or coronary bone and coffin bone, with the three sesamoid bones, which will all answer to the explanation on the right upper limb in this plate.

*In the pelvis.*

*ab c d e f g g h i i k l l l* The right os innominatum or bason bone including three others; *abcd* the os ilium, hip, or flank bone; *bc* the spine; *b* the anterior part of the spine; *c* the posterior part; *d* the protuberance from which arises the rectus

muscle of the leg; *efgg* the os ischium, or hich bone; *e* the acute process; *f* the tubercle of the ischium; *gg* the posterior notch for the passage of the internal obturator muscle; *hii* the os pubis; *ii* the spine or ridge of the os pubis; *k* the great foramen of the ischium and pubis; *lll* the external margin of the acetabulum.

*aab c c d f h i i k l l* The left os innominatum, which will answer to the explanation of the right os innominatum, with this difference only, that the left shews the external view and this the internal view.

*In the lower limbs.*

*ab c c d d e f g h i* The right femur or thigh bone; *a* the body or middle of this bone; *b c c d d e* the upper extremity, of which, *b* is the neck; *cc* the head incrustated with a smooth cartilage where it is jointed into the acetabulum; *dd* the great trochanter or spoke; *e* the less trochanter or spoke; *f* a very prominent part of the linea aspera, into which the external glutæus is inserted along with a part of the fascia lata; *g* a large fossa or notch, out of and from the borders of which the external head of the gemellus, and the plantaris muscles arise; *h i* the lower extremity; *h* the outer condyle of the lower head, which at *i* is covered with a smooth cartilaginous crust.

*k l m n o p p p p* The left femur or thigh bone; *l* the less trochanter; *m* a roughness from which arises the internal head of the gemellus; *n* the inner condyle; *o* the outer condyle; *p p p p* the smooth cartilaginous crust which covers the part of this lower head where it is jointed to the tibia and patella.

*q q q r r* The patellæ or knee-pan bones; *r r* that part which is covered with a smooth cartilaginous crust which forms part of the joint at the knee.

*s s* The inner femilunar cartilages which are interposed in the joints of the knees.

*t t* The outer femilunar cartilages in the joints of the knees.

*u v w x y u v w x y* The tibiæ or greater bones of the legs; *u* the upper head; *v* that part of the upper head which, belonging to the joint of the knee, is covered with a smooth cartilaginous crust; *w* a protuberance in which terminate the anterior ligaments which come from the patella and tie it to the tibia; *y* the lower head of the right tibia; *z* the lower head of the left tibia.

1 2 1 The fibulæ or small bones of the legs; 1 the upper head; 2 the lower extremity which ends here almost in a point.

3 4 5 4 5 6 The astragali or cockal bones; 4 5 the part which forms the juncture with the



bone of the leg covered with a smooth cartilaginous crust.

7 7 8 9 The calcanei or heel bones; 8 the projecting part that sustains the astragalus; 9 the tubercle into which is inserted the tendon of the gemellus, and to which the tendon of the plantaris is attached by ligaments.

10 The cubical bone of the tarsus or ancle.

11 11 The navicular bones of the tarsus.

12 12 The middle cuneiform bones of the tarsus.

13 The less cuneiform bone of the tarsus.

N.B. What are called the great cuneiform bones of the tarsus in the human skeleton are (as well as the bones of the great toe) wanting in this animal.

14 15 16 17 14 15 16 18 19 The bones of the metatarsus or instep; 14 15 a bone which is equal to the metatarsal bones of the second and third little toes both together in the human skeleton; 14 the upper head which articulates with the three lower bones of the tarsus; 15 the lower head, in this place covered with a smooth cartilaginous crust, where it articulates with the upper head of the bone of the first phalanx or order of the small toes; 16 17 an imperfect metatarsal bone in the place of that which, in the human skeleton, belongs to the little toe; 16 the upper head, by which it articulates with the cubical bone of the tarsus; 17 the lower head, which is very small, and (the bones of the little toe being wanting) forms no articulation; 18 19 an imperfect metatarsal bone in the place of that which, in the human skeleton, belongs to the first of the small toes; 18 the upper head by which it articulates with the less cuneiform bone of the tarsus; 19 the lower head which is very small, and (the bones of the first of the small toes being wanting) forms no articulation.

20 21 20 21 Bones which are always to be found in these joints, two in each, such are called sesamoid bones in the human skeleton; they serve, in this joint, to throw the bending tendons further from the centre of motion and form a proper groove for them to slide in.

22 23 24 22 23 24 The bones which are in the places of the three phalanges, or orders of bones of the small toes in the human skeleton: with farriers the first are called the great pasterns, the second the little pasterns, or coronary bones, the third the coffin bones.

25 25 Sesamoid bones lying over the posterior parts of the articulations of the coffin bones, with the coronary bones.

The physiology of the bones has been greatly extended by Mr. Hunter's curious *Experiments*

and *Observations on the Growth of Bones*, of which an account is published by Mr. HOME.

Du Hamel had published a very ingenious theory upon the Growth of Bones, which he endeavoured to support by experiments tending to prove, that bones grow by an extension of their parts: with this doctrine Mr. Hunter was not satisfied, and instituted experiments to determine the truth of Du Hamel's opinion.

He began his experiments by feeding animals with madder, which has a property of tinging with a red colour that part only of the bone which is added, while the animal is confined to this particular food.

He fed two pigs with madder for a fortnight, and at the end of that period one of them was killed; the bones, upon examination externally, had a red appearance: when sections were made of them, the exterior part was found to be principally coloured, and the interior was much less tinged.

The other pig was allowed to live a fortnight longer, but had now no madder in its food; it was then killed, and the exterior part of the bones was found of the natural colour, but the interior was red.

He made many other experiments of the same kind upon the increase of the thickness of the neck and head of the thigh bone. From these it appeared, that the addition of new matter was made to the upper surface, and a proportional quantity of the old removed from the lower, so as to keep the neck of the same form, and relatively in its place.

To ascertain that the cylindrical bones are not elongated by new matter being interposed in the interstices of the old, he made the following experiment: He bored two holes in the tibia of a pig, one near the upper end, and the other near the lower; the space between the holes was exactly two inches; a small leaden shot was inserted into each hole; when the bone had been increased in its length by the growth of the animal, the pig was killed, and the space between the two shot was also exactly two inches.

This experiment was repeated several times on different pigs, but the space between the two shot was never increased during the growth of the bone.

Besides these experiments on the growth of bones, he made others to determine the process of their exfoliation. He cauterized portions of bone in the same way in several different animals, so as to be able to examine the bones in the different stages of this process, and found that the earthy part of the living bone, in con-

# Bones of the Horse.







*Bones of the Horse.*



*Plate V.*





tact with the dead portion, was first absorbed, afterwards the animal mucilage itself, so as to form a groove between the two, which became deeper and deeper, till the dead bone was entirely detached; the dead portion itself having undergone no change.

From these experiments he ascertained the changes which take place in bones during their growth, and the readiness with which the materials of bones are absorbed; and from these facts, laid it down as an established principle, that the absorbents are the agents, by means of which the bones, during their growth, are modelled as it were, and kept of the same shape.

Bones, according to Mr. Hunter's doctrine, grow by two processes going on at the same time and assisting each other; the arteries bring the supplies to the bone for its increase; the absorbents at the same time are employed in removing portions from the old bone, so as to give to the new the proper form. By these means the bone becomes larger, without having any material change produced in its external shape.

The bones of quadrupeds are subject to the same diseases as those of the human subject; and when they take on inflammation, either spontaneously or in consequence of accidents, exhibit the same phenomena. We may observe this difference, however, that the less perfect animals are, in general, not so subject (with some specific exceptions) to spontaneous affections of the bones, and when so affected, exhibit stronger powers of restoration. See the articles SPAVIN, FRACTURE, DISLOCATION, &c.

BONES, BROKEN. See FRACTURE.

BONES, FOUL. See CARIES.

BONE-SPAVIN. See SPAVIN.

BORAGE, the Common, or *Borago officinalis*, Lin. a native plant, frequently found growing in waste lands, and upon old walls; it is rough, and clothed with small prickly hairs; has alternate leaves, and bears blue spreading flowers in June and July. See WITHERING, 230, and *Eng. Bot.* 36.

The flowers of the borage are much frequented by bees, and the plant itself may be used as a culinary vegetable, or as an ingredient in lettuce-salad, to which it imparts an agreeable flavour. The whole of this plant abounds with nitrous particles, which may be easily obtained by elixation; for after evaporating the lixivium to a proper consistence, and allowing it to stand in a cool place, crystals will be formed, which deflagrate upon the fire, and possess all the properties of salt-petre.

BORAX, called by modern chemists, Bo-

RATE OF SODA.—The common borax is a neutral salt, formed by the combination of the acid of borax with soda. This salt is brought from the East Indies; and in the language of the country is called *Svagab*. It is brought to Hindostan from the mountains of Tibbet, and is said to be dug up in a crystallised state from the bottom of certain salt lakes in a mountainous, barren, volcanic district, about twenty-five days' journey to the eastward of Lassa, the principal town of the kingdom of Tibbet.

It does not appear that borax was known to the ancients. The chrysocola, of which Dioscorides speaks, was nothing but an artificial folder, composed by the goldsmiths themselves, with urine, and rust of copper, which were beaten together in a mortar of the same metal. Borax is first mentioned in the writings of Geber; every thing therefore which has been written since that time concerning borax is applicable to the substance which is at present known to us by that name. Borate of soda, or common borax, is found, in commerce, in three different states. The first is brute borax, tincall, or chrysocola. It comes to us from Persia, and is enveloped and soiled by a greasy covering. The pieces of brute borax have almost all of them the form of a six-sided prism, slightly flattened, and terminated by a dihedral pyramid. The fracture of these crystals is brilliant, with a greenish cast. This kind of borax is far from being pure. The second kind of borax known in commerce comes from China. It is purer than the preceding, and has the form of small plates crystallised upon one of their surfaces, on which the rudiments of prisms may be perceived. This borax is mixed with a white powder, which appears to be of an argillaceous nature. The third kind of borate of soda or common borax that is met with in commerce, is that which has been refined or purified.

In order to purify borax, nothing more is necessary than to clear it of the unctuous substance which soils it, and impedes its solution. Crude borax added to a solution of mineral alkali, is more completely dissolved, and may be obtained of considerable beauty by a first crystallisation; but it retains the alkali made use of: and borax, purified in this manner, possesses a greater proportion of alkali than in its crude state. The oily part of borax may be destroyed by calcination. By this treatment it becomes more soluble, and may in fact be purified in this way; but the method is attended with a considerable loss, and is not so advantageous as might be expected. The most simple method of purifying borax, consists in boiling it strongly, and for a



long time. This solution being filtrated, affords by evaporation crystals rather foul, but which may be purified by a second operation similar to the foregoing.

The borate of soda when well purified is white, transparent, and has a somewhat greasy appearance in its fracture. It crystallises in hexahedral prisms, terminated by trihedral, and sometimes hexahedral pyramids; has a styptic taste; and converts syrup of violets to a green colour.

If borax be exposed to the fire, it swells up, the water of crystallisation is dissipated in the form of a vapour; and the salt then becomes converted into a porous, light, white, and opaque mass, commonly called calcined borax. If the fire be more strongly urged, it assumes a pasty appearance, and is at length fused into a transparent glass of a greenish-yellow colour, soluble in water; and which loses its transparency by exposure to the air, in consequence of a white efflorescence that forms upon its surface. This salt requires eighteen times its weight of water, at the temperature of sixty degrees of Fahrenheit's thermometer, to dissolve it; but boiling water dissolves one-sixth of its weight. Barytes and magnesia decompose borax. Lime-water precipitates the solution of this salt; and if quick-lime be boiled with borax, a salt of sparing solubility is formed, which is the borate of lime. Borax is used as an excellent flux in decimastic operations. It enters into the composition of reducing fluxes, and is of the greatest use in analyses by the blow-pipe. It may be applied with advantage in glass manufactories; for when the fusion turns out bad, a small quantity of borax re-establishes it. It is more especially used in soldering. It assists the fusion of the solder, causes it to flow, and keeps the surface of the metals in a soft or clean state, which facilitates the operation. It is an article much used in medicine.

This salt has the inconvenience of swelling up, and requires the greatest attention on the part of the artist who uses it in delicate works, more especially when designs are formed with gold of different colours. It has been long a desideratum to substitute some composition in the room of borax, which might possess its advantages without its defects. With this view the following process has been published by Mr. Georgi: "Natron, mixed with marine salt and Glauber's salt, is to be dissolved in lime-water; and the crystals which separate by the cooling of the fluid may be set apart. The lixivium of natron is then to be evaporated; and this salt afterwards dissolved in milk. The evaporation

affords scarcely one-eighth of the natron employed, and the residue may be applied to the same uses as borax."

It has also been affirmed that the phosphate of pot-ash fused with a certain quantity of sulphate of lime, constitutes an excellent glass for soldering metals with.

**BORBORYGMUS** (from *βορβορίζω*, to make a noise). A rumbling noise, excited by wind mixed with some degree of humidity in the bowels. This sort of noise is likewise what is produced by treading in the mire, *βορβορίζει*, whence its name.

**BORING**, a brutal operation in use amongst ignorant farriers formerly, for the cure of wrenched shoulders in horses. It was performed thus: having cut a hole in the skin over the part affected, the cellular membrane was blown up with a tobacco-pipe, as a butcher does veal: after which they thrust a cold flat iron, like the point of a sword-blade, eight or ten inches up between the shoulder-blade and the ribs. If this operation had any meaning, it was intended to excite an inflammation and discharge as near as possible to the supposed seat of the disease.

**BOS** (from *βω*, to bellow), in zoology, a genus of quadrupeds belonging to the order of pecora. The characters of this genus are taken from the horns and teeth. The horns are hollow within; and turned forward, in the form of crescents. There are eight fore-teeth in the under jaw, and none in the upper, their place being supplied by a hard membrane; and there are no dog-teeth in either jaw. Linnaeus enumerates six species, viz.

1. The **TAURUS**, including the bull and cow, has cylindrical horns bent outwards, and loose dewlaps. The bull, or male, is naturally a fierce and terrible animal. When the cows are in season, he is perfectly ungovernable, and often altogether furious. When chafed, he has an air of fullen majesty, and often tears up the ground with his feet and horns. The principal use of the bull is to propagate the species; although he might be trained to labour, his obedience cannot be depended on. A bull, like a stallion, should be the most handsome of his species. He should be large, well made, and in good heart; he should have a black eye, a fierce aspect, but an open front; a short head; thick, short, and blackish horns, and long shaggy ears; a short and straight nose, large and full breast and shoulders, thick and fleshy neck, firm reins, a straight back, thick fleshy legs, and a long tail well covered with hair. Castration remarkably softens the nature of this animal; it destroys all his fire and impetuosity, and renders him mild

and tractable, without diminishing his strength; on the contrary, after this operation, his weight is increased, and he becomes fitter for the purposes of plowing, &c.

The best time for castrating bulls is at the age of puberty, or when they are 18 months or two years old; when performed sooner, they often die. However, it is not uncommon to castrate calves a few days after birth. But such as survive an operation so dangerous to their tender age, generally grow larger and fatter, and have more courage and activity, than those who are castrated at the age of puberty. When the operation is delayed till the age of six, seven, or eight years, they lose but few of the qualities of bulls; are much more furious and untractable than other oxen; and when the cows are in season, they go in quest of them with their usual ardour.

The females of all those species of animals which we keep in flocks, and whose increase is the principal object, are much more useful than the males. The cow produces milk, butter, cheese, &c. which are principal articles in our food, and besides answer many useful purposes in various arts.

Cows are generally in season, and receive the bull, from the beginning of May to the middle of July. Their time of gestation is nine months, which naturally brings the veal or calves to our markets from the beginning of January to the end of April. However, luxury has fallen upon methods of interrupting this natural course, and veal may be had almost every month in the year.

Cows, when improperly managed, are very subject to abortion. In the time of gestation, therefore, they ought to be observed with more than ordinary care, lest they should leap ditches, &c. Neither should they be suffered to draw in the plough or other carriage, which is a practice in some countries. They should be put into the best pasture, and should not be milked for six weeks or two months before they bring forth their young. The calf should be allowed to suck and follow its mother during the first six or eight days. After this it begins to eat pretty well, and two or three sucks in a day will be sufficient. But if the object be to have it quickly fattened for the market, a few raw eggs every day, with boiled milk, and a little bread, will make it excellent veal in four or five weeks. This management of calves applies only to such as are designed for the butcher. When they are intended to be nourished and brought up, they ought to have at least two months' suck; because the longer they suck, they grow the stronger and larger. Those that are brought

forth in April, May, or June, are the most proper for this purpose: when calved later in the season, they do not acquire sufficient strength to support them during the winter.

The cow comes to the age of puberty in 18 months, but the bull requires two years: but although they are capable of propagating at these ages, it is better to restrain them till they be full three years. From three to nine years those animals are in full vigour; but when older, they are fit for nothing but to be fed for the butcher. A milk-cow ought to be chosen young, fleshy, and with a brisk eye.

The heaviest and most bulky animals neither sleep so profoundly, nor so long, as the smaller ones. The sleep of the ox is short and slight; he wakes at the least noise. He lies generally on the left side, and the kidney of that side is always larger than the other. There is great variety in the colour of oxen. A reddish or black colour is most esteemed. The hair should be glossy, thick, and soft; for, when otherwise, the animal is either not in health, or has a weakly constitution. The best time for inuring them to labour is at the age of two and a half or three years.

The ox eats very quick, and soon fills his first stomach; after which he lies down to ruminate, or chew the cud. The first and second stomachs are continuations of the same bag, and very capacious. After the grafs has been chewed over again, it is reduced to a kind of mash, not unlike boiled spinage; and under this form it is sent down to the third stomach, where it remains and digests for some time; but the digestion is not fully completed till it comes to the fourth stomach, from which it is thrown down to the guts. The contents of the first and second stomachs are a collection of grafs and other vegetables roughly macerated; a fermentation however soon commences, which makes the grafs swell. The communication between the second and third stomach is by an opening much smaller than the gullet, and not sufficient for the passage of the food in this state. Whenever, then, the two first stomachs are distended with food, they begin to contract, or rather perform a kind of re-action. This re-action compresses the food, and makes it endeavour to get out; now the gullet being larger than the passage between the second and third stomachs, the pressure of the stomach necessarily forces it up the gullet. The action of ruminating, however, appears to be in a great measure voluntary; as animals of this kind have a power of increasing the re-action of their stomachs. After the food undergoes a second mastication, it is then re-



duced into a thin pulp, which easily passes from the second to the third stomach, where it is still further macerated; from thence it passes to the fourth, where it is reduced to a perfect mucilage, every way prepared for being taken up by the lacteals, and converted into nourishment. What confirms this account of chewing the cud is, that as long as these animals suck or feed upon liquid aliment, they never ruminate; and in the winter, when they are obliged to feed upon hay and other dry victuals, they ruminate more than when they feed upon fresh grass.

Bulls, cows, and oxen, are fond of licking themselves, especially when lying at rest. But this practice should be prevented as much as possible; for as the hair is an indigestible substance, it lies in the stomach or guts, and is gradually coated by a glutinous substance, which in time hardens into round stones of a considerable bulk, which sometimes kills them, but always prevents their fattening, as the stomach is rendered incapable of digesting the food so well as it ought.

The age of these animals may be distinguished by the teeth and horns. The first fore-teeth fall out at the age of six months, and are succeeded by others of a darker colour, and broader. At the end of sixteen months, the next milk-teeth likewise fall out; and at the beginning of the fourth year all the fore-teeth are renewed, and then they are long, pretty white, and equal: However, as the animal advances in years, they become unequal and blackish. The horns of oxen four years of age are small-pointed, neat, and smooth, but thickest near the head: This thick part next season is pushed further from the head by a horny cylinder, which is also terminated by another swelling part, and so on (for as long as the ox lives, the horns continue to grow); and these swellings become so many annular knots by which the age may easily be reckoned: But, from the point to the first knot must be counted three years, and every succeeding knot only one year. The bull, cow, and ox, generally live about fourteen or fifteen years.

Ox-beef is very nourishing, and yields a strong aliment; the flesh of a cow, when well fattened and young, is not much inferior. Bull-beef is hard, tough, and dry; for which reason it is not much used for food. Veal is well-tasted, easy of digestion, and rather keeps the body open than otherwise.

The northern countries of Europe produce the best cattle of this kind. In general they bear cold better than heat; for this reason they are not so plenty in the southern countries. There are but few in Asia to the south of Ar-

menia, or in Africa beyond Egypt and Barbary. America produced none till they were carried there by the Europeans. But the largest are to be met with in Denmark, Podolia, the Ukrain, and among the Calmuck Tartars; likewise those of Ireland, England, Holland, and Hungary, are much larger than those of Persia, Turkey, Greece, Italy, and Spain; but those of Barbary are least of all. In all mountainous countries, as Wales, the Highlands of Scotland, &c. the black cattle are small; but hardy, and when fattened make excellent beef. In Lapland, they are mostly white, and many of them want horns.

The British breed of cattle, Mr. Pennant observes, in his *Synopsis of Quadrupeds*, has in general been so much improved by foreign mixture, that it is difficult to point out the original kind of these islands. Those which may be supposed to have been originally British are far inferior in size to those on the northern part of the European continent: the cattle of the Highlands of Scotland are exceedingly small; and many of them, males as well as females, are hornless: the Welsh runts are much larger: the black cattle of Cornwall are of the same size with the last. The large species that is now cultivated through most parts of Great Britain, are either entirely of foreign extraction, or our own, improved by a cross with the foreign kind. The Lincolnshire kind derive their size from the Holstein breed; and the large hornless cattle that are bred in some parts of England, came originally from Poland.

About 250 years ago, there was found in Scotland a wild race of cattle, which were of a pure white colour, and had, if we may believe Boethius, manes like lions. Mr. Pennant says he cannot but give credit to the relation; having seen in the woods of Drumlanrig in North Britain, and in the park belonging to Chillingham castle in Northumberland, herds of cattle probably derived from the savage breed. They have lost their manes, but retain their colour and fierceness: they were of a middle size, long-legged, and had black muzzles and ears; their horns fine, and with a bold and elegant bend. —The keeper of those at Chillingham said, that the weight of the ox was 38 stones; of the cow, 28: that their hides were more esteemed by the tanners than those of the tame; and they would give sixpence per stone more for them. These cattle were wild as any deer: on being approached, they would instantly take to flight, and gallop away at full speed; never mix with the tame species; nor come near the house unless constrained to it by hunger in very severe weather. When it is necessary to kill any, they are

always shot: if the keeper only wounds the beast, he must take care to keep behind some tree, or his life would be in danger from the furious attacks of the animal, which will never desist till a period is put to its life.

Frequent mention is made of our savage cattle by historians. One relates that Robert Bruce was (in chasing these animals) preserved from the rage of a wild bull by the intrepidity of one of his courtiers, from which he and his lineage acquired the name of *Turn-bull*. Fitz-Stephen, in his History of London preserved in Leland's Itinerary, names these animals (*ursi sylvestres*) among those that harboured in the great forest that in his time lay adjacent to London. Another enumerates, among the provisions at the great feast of Nevil archbishop of York, six wild bulls; and Sibbald assures us, that in his days a wild and white species was found in the mountains of Scotland, but agreeing in form with the common sort. These were probably the same with the *bifontes jubati* of Pliny, found then in Germany, and might have been common to the Continent and our island: the loss of their savage vigour by confinement might occasion some change in the external appearance, as is frequent with wild animals deprived of liberty; and to that we may ascribe their loss of mane. The urus of the Hercynian forest described by Cæsar (*lib. vi.*) was of this kind; the same which is called by the modern Germans, *aurochs*, i. e. *bos sylvestris*.

The ox is the only horned animal in these islands that will apply his strength to the service of mankind. It is now generally allowed, that, in the draught, oxen are in many cases more profitable than horses; their food, harness, and shoes, being cheaper; and should they be lamed or grow old, an old working beast will be as good meat, and fatten as well, as a young one.

There is scarce any part of this animal without its use. The blood, fat, marrow, hide, hair, horns, hoofs, milk, cream, butter, cheese, whey, urine, liver, gall, spleen, bones, and dung, have each their particular use in manufactures, commerce, and medicine.

The skin has been of great use in all ages. The ancient Britons, before they knew a better method, built their boats with osiers, and covered them with the hides of bulls, which served them for short coasting voyages.

Vessels of this kind are still in use on the Irish lakes; and on the Dee and Severn: in Ireland they are called *curach*, in English *coracles*; from the British *cwraegl*, a word signifying a boat of that structure. At present, the hide, when tanned and curried, serves for boots, shoes, and

numberless other conveniences of life.—Vellum is made of the thinnest calve-skins, and the skins of abortions. Of the horns are made combs, boxes, handles for knives, and drinking vessels; and when softened by water, obeying the manufacturer's hands, they form pellucid laminæ for the sides of lanterns. These last conveniences were invented by the great king Alfred, who first used them to preserve his candle time-measures from the wind; or (as other writers will have it) the tapers that were set up before the reliques in the miserable tattered churches of that time. The very smallest fragments, and even the dust and filings, of horn, are found very serviceable in manuring cold lands. The matter lying within, on which the horn is formed, is called the *slough*; and, when dry, is used in making walls or fences; in which, covered from wet, it will last a long time. It is also most admirable in mending roads, where the soil is soft and spewy; for, dissolving, it becomes a glutinous substance, that binds amazingly with gravel. As a manure, they allow between two and three quarter-sacks to an acre. Horn sawdust with mold is an excellent compost for flowers. It is also of use in hardening, and giving what is called a proper temper to metals. In medicine, horns were employed as alexipharmics, or antidotes against poison, the plague, or the small-pox; they have been dignified with the title of *English bezoar*, and are said to have been found to answer the end of the oriental kind.

The teguments, cartilages, and gristles, for the indifferent,—and, for the finer, all the cuttings, parings, and scraps of hides,—are boiled in water, till the gelatinous parts of them are thoroughly dissolved; and the mass, properly dried, becomes glue.

The bones are used by mechanics where ivory is too expensive; by which the common people are served with many neat conveniences at an easy rate. From the tibia and carpus bones is procured an oil much used by coach-makers and others in dressing and cleaning harness, and all trappings belonging to a coach; and the bones calcined afford a fit matter for tests for the use of the refiner in the smelting trade.

The blood is used as an excellent manure for fruit-trees, and is the basis of that fine colour the Prussian blue.

The sinews are prepared so as to become a kind of thread or small cord, used in sewing saddles, in making racquets, and other things of a like nature.

The hair hath also its value, and is employed



in many different ways. The long hair of the tail is frequently mixed with horse-hair spun into ropes, and sometimes wove. The short hair serves to stuff saddles, seats of several kinds, mattresses, and chairs. The refuse is a good manure, and operates more speedily than the horns.

The fat, tallow, and suet, furnish us with light; and are also used to precipitate the salt that is drawn from briny springs. The gall, liver, spleen, and urine, had also their place in the materia medica, though they have now resigned it to more efficacious and agreeable medicines.

The uses of butter, cheese, cream, and milk, in domestic economy, and the excellence of the latter in furnishing a palatable nutriment for most people whose organs of digestion are weakened, are too obvious to be insisted on.

2. The *BONASUS* has a long mane; its horns are bent round towards the cheek, and are not above a span long. It is about the size of a large bull, and is a native of Africa and Asia. When enraged, he throws out his dung upon dogs or other animals that annoy him; the dung has a kind of caustic quality, which burns the hair off any animal it falls upon.

3. The *BISON* has likewise a long thick mane, which covers the whole neck and breast on each side. The horns are turned upwards, and exceedingly large; there is a large protuberance or bunch on the back; his eyes are red and fiery, which gives him a furious aspect. He is fierce, cruel, and so bold that he fears nothing. It is unsafe to hunt him but where the trees are so large as to hide the hunters. He is a native of Mexico and Florida.

The *musk-ox* of Hudson's bay, a variety of this species, wants the hump between the shoulders. It is about the size of a Scotch bullock; has a thick body, and short legs. The horns are large, and very remarkable: they are united at their origin in the skull; but immediately after, they fall down on each side of the crown of the head, then taper away small, the points turning up. The hair is black, and grows to a great length; underneath which is a fine wool, superior to Vigonia wool. The male only has the curious sealp; the female is covered with hair. These animals frequent the country about 100 miles inwards to the north-west of Churchill river, in Hudson's bay, where they are very numerous. The Indians kill great numbers of them: but the flesh is coarse eating; and so musky tasted at certain seasons, as not to be eatable. From 2000 to 4000 weight of the flesh frozen, is brought to Prince of Wales's fort annually, and is served out as provisions to the

Europeans. A specimen of the head of this animal is now in Edinburgh, in the possession of Mr. Graham, from Hudson's bay.

4. The *GRUNNIENS*, or hog-cow, has cylindrical horns bent backwards. The body is so hairy, that the hair hangs down upon its knees like a goat. The colour of the body is black, but the front is white. It has bristles on its back, tail, and hind legs, and it grunts like a hog. It is an inhabitant of the north of Asia.

A variety of this species is the *Indian ox*, with a vast hump on the shoulders. They differ much in size, and in the form of their horns. Some are very large, and of a reddish colour; with horns short, and bending close to the neck: others very small, with horns almost upright, bending a little forward. In Surat, is a minute kind not bigger than a great dog, which have a very fierce look, and are used to draw children in small carts. In Celebes is a small species not bigger than a middle-sized sheep, called *Anoa*, very fierce and wild, of a dark ash colour, inhabiting the rocks. Mr. Loten, when in India, put some of them into a paddock, and in one night's time they killed 14 or 15 of his deer by ripping up their bellies.

5. The *BUBALIS*, or buffalo, has large black horns bent backward and inward, and plain before. The hair on the back is very hard, but thinly scattered over the body. It is a native of Asia. But they are tamed in Italy, and used for the same purposes as black cattle in other countries. They draw carriages, and are guided by a rope tied to a string thrust through their noses. The buffalo is larger than an ox, has a thicker body, and a very hard hide. His pace is slow; but he will carry a great burthen. They feed in herds like cows; and yield plenty of milk, of which very good butter and cheese is made. Their flesh is pretty good, but not to be compared to beef. The wild buffalo is a very fierce and dangerous animal; he often attacks travellers, and tears them in pieces. However, they are not so much to be feared in woods as in the plains, because their horns, which are sometimes ten feet long, are apt to be entangled in the branches of trees, which gives those who are surprized by them time to escape. They are excellent swimmers, and will cross the largest rivers without any difficulty. They run wild in great troops on the coast of Malabar; for which reason strangers are allowed to hunt and kill them at pleasure.

6. The *INDICUS*, or little Indian buffalo, has horns shorter than its ears, a bunch on its back, and no mane. It is about the size of a calf six months old, and used in the East Indies for drawing coaches.

**BOTANY** (from the Greek word *βοτάνη*, *herba*, a herb), that part of natural history which relates to plants or vegetables.

This pleasing science had the misfortune of being, from its infancy, considered merely as a branch of medicine; and while the naturalist was employed in discovering the virtues of plants, the knowledge of their organisation was in a great measure neglected. In consequence of this erroneous idea of botany, the study of it was for a long time confined to medicinal plants; which were searched for with a view to discover remedies.

On the revival of letters, instead of investigating plants in the garden of Nature, they were studied only in the writings of **PLINY** and **DIOSCORIDES**: thus translators, commentators, and practitioners, seldom agreeing, a variety of names was given to the same plant, and the same name to several plants. At length, more careful researches and many excellent observations were made; but the latter being enveloped in a chaos of nomenclature, physicians and herbalists no longer understood each other.

Botanists of real genius indeed occasionally published instructive books, among which the principal are the writings of **CORDUS**, **GESNER**, **CLUSIUS**, and **CÆSALPINUS**; but each of these authors regulating his nomenclature by his own method, created new genera, or divided the old ones, according to his own fancy. Hence the genera and species were so intermingled and confounded, that almost every plant received as many names as there were authors employed in its description.

The advancement of the study of botany was, however, greatly promoted by the writings of the indefatigable **BAUHIN**, two brothers, each of whom undertook an universal history of plants, including a synonymy, or exact list of the names of each plant in the works of all the writers that preceded them.

Meanwhile, voyages of discovery enriched botany with new treasures, and while the old names over-loaded the memory, new ones were invented for the newly discovered plants. In order to extricate themselves from this immense labyrinth, botanists were obliged to adopt some methodical arrangement. **RAY**, **HERMAN**, **RIVINUS**, proposed their respective plans; but **TOURNEFORT**, who published his system in 1697, surpassed them all. To him we are indebted for the first complete regular arrangement of the vegetable kingdom; his plates of generic characters are excellent, but his work is deficient, as it contains no characters or descriptions of the different species.

At length, **LINNÆUS** formed the vast project of new moulding the whole science of botany. Having prepared the rules by which it ought to be conducted, he determined the genera of plants, and afterwards the species; and by keeping all the old names that agreed with these new rules, and new modelling all the rest, he established a clear nomenclature, formed upon principles more consonant with Nature. He also invented specific names, which he joined to the general ones, in order to distinguish the species.

The whole Linnæan system is founded on the idea, that there is in vegetables as well as in animals, a real distinction of the sexes; that each plant may be analysed by its several organs of fructification; and, consequently, that it is necessary to acquire an accurate knowledge of the *number, shape, situation, and proportion* of these parts. Hence only, the student will be enabled to understand the elements of the science. And as all vegetables are capable of producing blossoms and fruit, or seed, the following parts, which compose a flower, must be minutely examined in every plant, namely: 1. The *calyx*, or flower cup, or empalement; 2. The *corolla*, or blossom, or flower-leaf; 3. The *stamina*, or chives; 4. The *pistillum*, or pointal. 5. The *pericarpium*, or seed-vessel; 6. The *semina*, or seeds. To these may be added the nectary, or honey-cup; and the receptacle, or base. It required the resolution, knowledge, and ingenuity of **LINNÆUS**, to effect this reform with success. His system at first met with resistance, and meets with it still from his rivals in fancy; but on account of its practical utility it has been almost universally adopted throughout Europe.

To pursue the study of plants with advantage, that of the *nomenclature* must not be neglected. Names, it is true, are arbitrary; but if the most engaging part of *Natural History* merits the attention of the curious, it will be necessary to begin with learning the language of the writers, in order to know with precision to what objects the names employed by them actually belong.

The vegetables on the face of the globe may be considered as analogous to its inhabitants; under which view of the subject *vegetable* may be said to resemble the *inhabitants* in general; *classes*, the *nations*; *orders*, the *tribes*; *genera*, the *families*; *species*, the *individuals*; and *varieties*, the same *individuals* in different circumstances.

Besides the satisfaction which the study of the works of Nature, and especially that of botany, affords to an inquisitive mind, it coun-



teracts the passion for more frivolous amusements, and always presents objects worthy of contemplation. Hence the late Dr. WITHERING very justly remarks, that, independently of its immediate use, the study of botany is as healthful as it is innocent; that it beguiles the tediousness of the road; furnishes amusement at every footstep of the solitary walk; and, above all, that it leads to pleasing reflections on the bounty, the wisdom, and the power of the Deity.

Among the latest elementary works of this branch of science, Dr. WITHERING'S "*Arrangement of British Plants*," may afford sufficient information to the Veterinary student.

BOTS, a kind of worms, very troublesome, and sometimes dangerous to horses. Mr. RYDING gives the following account of them in his VETERINARY PATHOLOGY.

"As the bots are," says he, "when in large quantities, very destructive to horses, by depriving them of nutriment, preventing digestion, and injuring the stomach, in which they are generally found; and as little has been offered to the public respecting their origin, and the means by which they are conveyed into the stomach, we shall first endeavour to point out the information which recent observation has furnished respecting them.

"The bots are a species of fly worm, produced from the eggs of the HÆMORRHOIDALIS, a two-winged fly, of the genus *æstrus*, and nearly of the size of the humble bee, which deposits its eggs in the rectum of the horses, and occasions him great torment.

"The worms of the human subject have not been longer known to the world than those of the horse; and the farriers, in all ages, who have undertaken the care of these valuable animals, have had some remedies for the long and short worm bred in their intestines. The short ones are the creatures here to be described; but though the world has so long been acquainted with their existence, it never knew their origin till M. Vallisneri discovered, of late, that they were produced from one of these flies, which insinuates itself into the fundament of the horse. These flies always live in the open field, and are seldom found near towns or houses; and this is the reason why those horses which are kept up in the stable in summer and autumn are scarcely ever found to be subject to these worms.

"In the latter end of summer, and in autumn, these flies are found continually buzzing about the backs of horses in the open field, seeking an opportunity to deposit their eggs. Horses, at this season, are sensible of the business of this

little annoyer, and have been seen, from the most quiet state, to jump, run about, and kick, only at the sound of the wings of one of these flies. This insect has been observed, when it has not succeeded in its first attempt, to fly with less noise towards a single horse in another part of the field, slowly to creep under his tail, and to use some gentle titillation, in order to make the creature open his fundament; and, when a little open, has ventured to creep in, where she finds herself in a proper place for the depositing her eggs. After this the horse has kicked and capered, as if mad, and continued so for upwards of a quarter of an hour.

"The worms hatched from these eggs soon find their way further up the intestines, and often penetrate into the stomach. After a sufficient time for acquiring their destined growth, they naturally quit the stomach, in order to get towards the lower part of the intestines, and are either voided with the dung, or of themselves crawl out.

"There is nothing singular in the figure of these worms. They are larger than those of the common flesh-fly, and smaller than those of the ox-fly: they are somewhat of a conic figure, their heads being pointed, and their posterior part much larger; they are each provided with two crustaceous hooks, by which they lay hold, and pull themselves along, by that means, and adhere so firmly to the coats of the intestines, as to prevent their being forced out of their habitation by the fæces, before they are ripe for their chrysalis state.

"When these worms are only in small numbers in a horse, they do very little harm to the animal; but there are seasons in which they increase to such vast numbers, that they become a very fatal malady. In some years, when horses have died of a sort of epidemical disease, after they have been opened, prodigious quantities of these worms have been found living in their stomachs, each having formed a sort of cell in its membranes, and all being lodged there, as close together as the seeds in a pomegranate. Nor need we wonder how such immense numbers should be found in one horse, since one female is able to deposit several hundred eggs.

"When these worms are fallen from the intestines, they crawl about till they find some place of safety, where they make a shell of their skin, and undergo all their changes; whence they finally come out in the form of their parent fly.

"From what has been said, it may be suspected, that all horses which have been at grass during the summer and autumn, have received

a quantity of these worms into their intestines; and that it becomes evidently necessary that a course of physic should be adopted, on their being removed into a stable. For the destruction and removal of these worms, the following medicine will be found most effectual:

Take vitriolated quicksilver, one drachm;  
Liquorice, Linseed, of each, in powder,  
half an ounce;  
Syrup or honey sufficient to form the  
mass; and divide into two balls.

"The horse should be put upon a diet of bran mash before this medicine is given; after which let him take one of these balls, and the other about forty hours afterwards. And when you have waited about the same time for the operation of the medicine, let the following brisk purge be given:

Take Barbadoes aloes, from six to eight  
drachms;  
Calomel, one drachm;  
Venice turpentine sufficient to form the  
ball.

"By paying proper attention to the operation of the above medicines, we may be able to judge if it has the desired effect; but if, after it is over, we suspect that there are still some worms remaining, a second course may be repeated in about a fortnight afterwards:

"During the taking of the above medicine, the horse should be kept warmly clothed, and his diet mashes, with gentle exercise.

"If the horse is affected with common worms, the above course of physic will be found equally efficacious for their destruction."

**BOVINE AFFECTION**, the DISTEMPER of BLACK CATTLE. A disease is said to have been met with among black cattle, caused by a worm lodged between the skin and the flesh, and perforating the same. The Arabians call it *agritudo bovina*; it is however but little known in Europe, nor is it mentioned by the ancient Greeks.

Some confound this disorder with the *dracunculi*, but they are very different. Something analogous to this disorder is a cutaneous one, with which some scorbutic constitutions are frequently affected, and which seems to be owing to an obstruction of the perspirable matter which concretes in the pores of the skin, and forms a fetaceous substance resembling a worm, with a black head, which may be squeezed out, and which sometimes causes a small suppuration, and is discharged with the pus.

AVENZOAR gives the following account of the *bovina affectio*. "Sometimes," says he, "a worm breeds between the skin and the flesh;

and if this worm is not soon killed, the consequences may be pernicious. As soon as it is perceived, burn the adjacent part with a hot iron, so that heat may penetrate to the worm, in a degree sufficient to kill it. This done, dress as is usual after burns, and purge with aloes." Here Avenzoar speaks of this disorder as in human subjects. But ALBUCASIS, who has two chapters, one on the *dracunculi*, another on the *bovina affectio*, says, "This worm, which is generated between the skin and flesh of black cattle, takes its course over the whole body, and is plainly perceivable in its motion, from one part to another, until it breaks the skin; and wherever it makes a breach, there it finds egress." ALZARAVIUS says, "that in human subjects this worm passes betwixt the skin and the flesh, as Albucasis hath represented it in brutes; and that it is generated in the same matter as that from which lice are produced."

Another *bovina affectio* is described in a dissertation "De Boùm Œstro" by WALLSINERIUS. This ŒSTRUM, or VEXATIOUS FLY, pitches on the backs of black cattle, and with a kind of sting, growing to its hinder part, perforates them, and into each perforation introduces an egg, which some time after grows to a worm, and this to a fly, which in due season is like its parent. When this fly pierces the skin, it causes severe pain in the oxen. The worm, however, which is deposited, grows without any remarkable injury to the health of the animal; it never moves from its place, but in the following spring it occasions a tumor, out of which it finds its way, when summer approaches, and becomes a fly. See Le Clerc, *Hist. Lumbric*.

BOUGIE, in the French language means a wax candle. The term is applied to a machine, which (as the wax candle formerly was) is introduced into the urethra in men for removing obstructions there. It is likewise known by the terms *candela cerea*, vel *medicata*.

BOULETTE, in the manege, a term formerly applied to a horse, whose fetlock or pastern joint bent forward, and out of its natural situation, whether through violent riding, or on account of his being too short-jointed; in which case the least fatigue will occasion it.

BOUILLION, a disease of which the old writers on farriery give the following vague description. "A bouillion," say they, "is a lump or excrescence of flesh that grows either upon or just by the frush, inasmuch that the frush shoots out like a lump of flesh, and makes the horse halt; and this we call the flesh blowing upon the frush."

Manege horses, that seldom wet their feet,



are said to be most subject to these excrescences, which are probably nothing more than common fleshy granulations.

**BOUND**, a term of various application in veterinary medicine. Any part of an animal that is embraced with an unnatural force is said to be *bound*: thus horses are liable to be **HOOF-BOUND**, **HIDE-BOUND**, &c. See those articles.

Or the **BOWELS** may be constricted so as not to part with the fæces; in which case the belly is said to be *bound*. See **COSTIVENESS**.

**BOUTE**, in the manege, is applied to a horse when his legs are in a straight line from the knee to the coronet. **GUILLET** says, short jointed horses are apt to be *a bouté*; and, on the other hand, long jointed horses are not.

**BOWELS**, or **INTESTINES**. See **INTESTINES**. The horse, and other quadrupeds, are liable to most of the human diseases affecting these parts. See **COLIC**, **DIARRHŒA**, &c. They may be generally considered as arising from two causes, viz. **INFLAMMATION**, and **SPASM**: though in some instances, a third cause of disease has been known to supervene, viz. **SCHIRRUS**. Some, however, think the latter should rather be considered as a termination or consequence of inflammation.

The signs by which inflammation of the bowels, in the horse, is to be distinguished from spasm, are the following:

In inflammation, the horse repeatedly lies down and gets up again, brings his head round often towards his belly, kicks his belly with his hind legs, is obstinately costive, feverish, and his pulse hard and frequent.

In spasm, as the pain only occurs at intervals, the animal's feelings are expressed more suddenly, he usually lies down during the spasm, and rolls on his back.

For the cure of inflammation inject warm water very largely; avoid purging; bleed to three, four, or five quarts; inflame the skin of the abdomen or neighbouring parts by the most expeditious means.

For the cure of spasm, also, inject warm water; give opium and tartarized antimony, and diuretics, with aromatic substances.

Inflammation of the bowels, if not quickly remedied, soon goes on to gangrene, and proves fatal. Sometimes this will happen in twenty-four hours, or less.

**BOWEL-GALLED**. A horse is vulgarly said to be *bowel-galled*, when the girth frets his skin, between the elbow of his fore leg and his ribs.

This is occasioned by a horse's shape generally: for when the fore parts about the shoulders

and breast are thin, and the belly large, the saddle by degrees runs towards the withers, and the girth works the skin off about those places.

The cure is best performed by anointing with the common white ointment of the shops; and taking away the cause, by shortening the crupper, according as necessity urges.

**BOW-LEGGED**, a defective conformation or posture of the fore legs of a horse; produced naturally, or in consequence of his having been worked too young. Having this deformity, **M. de SAUNIER**, says, neither in the one case nor the other is the horse of any value, because he never can be sure-footed. Besides this, it is disagreeable to the eye; and may be known by looking at the two fore legs, standing about three paces from his shoulder. If the knees project, and the legs turn in under him, so that the knees come further out than the feet, this is properly a *bow-legged* horse; though the term is no less applicable if the bone be curved in any other direction. (See **ARCHED**.) Such a horse ought not to be taken for any service whatever, as he never can stand firm on his legs; and how handsome soever he may otherwise be, he should on no account be used for a stallion, because all his progeny will have the same deformity. No cure for this deformity has ever been devised.

**BOWS OF A SADDLE**, are two pieces of wood laid archwise, to receive the upper part of a horse's back, to give the saddle its due form, and to keep it tight. The fore bow, which sustains the pommel, is composed of the withers, the breasts, the points or toes, and the corking. The withers is the arch that rises two or three fingers over the horse's withers. The breasts are placed where the arch or the upper part of the bows end. The points or toes are the lower part of the bow; and the corking are pieces of wood, formerly pieces of cork, upon which we sit, and are made fast to the bolsters. The hind bow bears the trousséquin or quilted roll. The bows are covered with sinews, and strengthened with bands of iron, to keep them tight; and on the lower side of the bows, the makers nail on the saddle straps, with which they make fast the girths.

**BOX**, **BUXUS**, **Lin.** the **BOX-TREE**, a genus of plants containing three species; namely, the *sempervirens*, or common box, with oval leaves; the *angustifolia*, or narrow-leaved box; and the *suffruticosa*, or Dutch box; the first of which only is indigenous. The two first-mentioned species grow in great abundance upon Box-hill, near Dorking, in Surrey, where there were formerly large trees of this kind. Of the first species, there are two or three varieties, which

are propagated in gardens ; and this, as well as the second, may be either raised from seeds or cuttings ; the latter should be planted or sown in autumn, on a shady border.

The leaves, which are purgative, dislodge worms from the intestines ; and with that view, have been given to horses, chopped small, and mixed with their provender.

**BRACHIÆUS MUSCULUS.** See **BRACHIALIS**.

**BRACHIALIS ARTERIA**, the **BRACHIAL ARTERY** ; a continuation of the axillary artery, which, as soon as it has passed behind the tendon of the pectoralis major, receives the name of *brachial*. See *k*, Pl. III. and the description, in the article *ANATOMY of the HORSE*.

**BRACHIALIS EXTERNUS and INTERNUS** ; these are the **BRACHIÆUS EXTERNUS and INTERNUS**. See the plates of the horse ; "*Muscles in the upper limbs*," &c.

**BRACHIO-CUBITAL LIGAMENT.** The expansion of the lateral ligament (see **LATERAL LIGAMENT**), which is fixed in the inner condyle of the os humeri, runs over the capsula, to which it closely adheres, and is inserted like radii on the side of the great sigmoid cavity of the ulna ; it is covered on the inside by several tendons, which adhere closely to it, and seem to strengthen it.

**BRACHIUM** (from *βραχίον*, *short*). See **HUMERUS**, and the description of muscles "*In the right upper limb*," &c. under *ANATOMY of the HORSE*.

**BRACTE**, or **BRACTEA**, one of the seven fulcres or props of plants ; a leaf different from the other leaves in shape and colour, generally situated on the peduncle, and often so near the corolla, as easily to be mistaken for the calyx : but the calyx withers, when the fruit is ripe, if not before ; whereas the *bractæ* is generally more permanent. *Bractes* are either green or coloured.

**BRADYPEPSIA** (from *βραδύς*, *slow*, and *πέψω*, *digest*) ; **WEAK DIGESTION**, or concoction of food. Blancard says, it is a slow digestion, proceeding from a depraved disposition of the acid ferment in the stomach.

**BRAIN**, **CEREBRUM** (quasi, *carabrum*, à *κεφαλή*, *caput*), called also **ENCEPHALUS** ; brain, that part of the body of an animal which is contained within the skull. We shall speak of this part as it is found in the horse, and begin by describing its *membranes*. The brain has two remarkable teguments or membranes, the uppermost called the *dura mater* being very strong, and the undermost the *pia mater*, from its close

adherence to the substance of the brain. The *dura mater* is tied to the basis of the skull, and to all the sutures, by filaments and blood-vessels, which communicate with the scalp and external parts of the head ; but it adheres lightly to the other parts. It has three processes ; the first is called *falx* from its resemblance to a sickle, dividing the brain into two halves. In a horse it is not so much arched as in men, because of the flatness and length of his forehead ; and, as Mr. *Chefelden* has observed, the upper part of the skull in brutes is shaped in such a manner as to fit the folds of the brain, which indeed is plain to be observed in horses, where it lies as in a case, and by that means is preserved from being injured by violent concussions. The second process runs from the lower and hinder part of the former towards each ear, where it is fixed to the *os petrosum*. The third runs downward towards the *foramen magnum*, or great aperture, through which the spinal marrow passes. The *dura mater* has several large veins, usually called *sinuses*, to distinguish them from the other veins which are cylindrical. These receive the blood from the lesser veins. One runs along the upper edge of the *falx*, and a smaller one runs along the lower edge. There are, besides these, several other *sinuses*, viz. the *longitudinalis superior*, the *rectus*, and *longitudinalis inferior*, and two called the *lateral sinuses*, which begin at the terminations of the longitudinal and straight *sinuses*, into which the others empty themselves. These pass through the *foramina* of the skull into the internal jugular veins. There is also a circular *sinus* which empties itself partly by detached branches into the *lateral sinuses*, and partly into two others, called the *cervical sinuses*, which pass down on each side through the great hole at the bottom of the skull, and through the transverse processes of the vertebrae of the neck, but most of the *sinuses* of the *dura mater* empty themselves into the internal jugulars.

The *pia mater* is a much finer and thinner membrane than the *dura mater*, and adhering close to the brain, involves its whole substance, somewhat resembling the film that covers a ripe walnut. It has a vast number of very small arteries that spring from the *cervical* and *carotids*, and they are here divided into extremely minute branches, that the blood may not enter the brain with too much impetuosity, which would be both inconvenient and dangerous. Its veins arise from the jugulars, and unite in such a manner that they may more easily open into the *sinuses* in fewer and larger branches, by which this fine membrane is preserved from injury, that other-



wife might happen on every slight accident if the arterial blood should meet with any great obstruction.

There is another thin membrane between the *pia mater* and *dura mater*, called the *arachnoides*, which, with the other two, also accompanies the *medulla spinalis*.

The brain consists of two principal parts, viz. the *cerebrum* and *cerebellum*. The *cerebrum* is that which fills up all the upper and fore part of the skull, and is separated from the *cerebellum* by the second process of the *dura mater* above described. Its upper side is divided into two hemispheres or halves, and its under side into four lobes, the two posterior lobes being larger than the anterior. At the meeting of the four lobes appears the *infundibulum* running from the ventricles of the brain into the *glandula pituitaria*. The upper part of the brain is of a cineritious or ash colour, called its *cortical* part, and its lower or inner side being white, is therefore called the *corpus callosum*, under which appear the two superior ventricles, which are divided into right and left by a thin membrane named *septum lucidum*, which is extended between the *corpus callosum* and *fornix*. The *fornix* is a medullary substance which reaches from the anterior or fore part of these ventricles, beginning with two small roots, and afterwards divides into several branches called *crura fornicis*. In the basis of these two ventricles are the *corpora striata*, which are so called from their streaks and variegations, and the *thalami nervorum opticorum* where the optic nerves pass. In this part of the brain Mr. COLEMAN, Professor at the VETERINARY COLLEGE, has discovered a peculiarity of structure not noticed in any account of the dissections of the horse. Beyond the *thalami nervorum opticorum* are the *nates* and *testes*, which are only two small protuberances of the brain. Above the *nates* is situated the *glandula pinealis*, and upon the *thalami nervorum opticorum* are the *plexus choroides*, consisting of a number of blood-vessels, glands, and *lymphæ-duets*. Under the beginning of the *fornix* is a small foramen or hole, with another under its middle, and the space between these *foramina* and the *cerebellum*, under the two anterior ventricles, constitutes the third ventricle.

The *cerebellum* lies partly under the brain, and is separated from it by the second process of the *dura mater*, which Mr. Cheselden has observed to be bony in all the rapacious animals he has dissected; and in most others, it is so firm and so commodiously situated, that the *cerebellum* cannot be easily pressed upon by the

*cerebrum*. The fourth ventricle belongs particularly to the *cerebellum*, and is plain to be seen when that is divided longitudinally. The basis of the *cerebellum* consists of two medullary bodies called *pedunculi*, and the extremity of the fourth ventricle is named *calamus scriptorius*, from the resemblance it has to a writer's pen.

The *medulla oblongata* is a continuation of the medullary part both of the *cerebrum* and *cerebellum*, and the spinal marrow is a production of the *medulla oblongata*, which passes through the great foramen or hole of the skull, and through the whole channel of the spines of the neck, back, and loins. It enlarges, in a horse, about the withers, where the large nerves are given to the fore legs, and in the loins, where the crural nerves are distributed to the hind legs, thighs, and all the hinder parts; and the lower end of the spinal marrow, from whence these and many other nerves spring, is called the *cauda equina*, which is a very appropriate term in the anatomy of a horse. The parts that immediately involve the spinal marrow for its protection, are, a production of the membranes of the brain already described, viz. the *dura* and *pia mater*, and the *tunica arachnoides*.

From the brain proceed the nerves, which are the medium of sensation, volition, &c. See NERVES. For an account of the diseases of the brain, see the article HEAD, and the several affections there referred to.

BRAN, the husks of wheat, which, when ground, are separated from the flour by a sieve. It contains a considerable portion of the nutritious matter of the grain, is less glutinous than flour, and slightly detergent and purgative. Bran is an useful ingredient in a horse's diet, if discreetly employed; and when scalded with boiling water, is a kind of panada for cattle that are sick. But it is universally agreed by veterinary writers, that a continued use of bran, either raw or scalded, is improper; as it is apt to relax and weaken the bowels. Whenever bran is employed in mashes for cattle, as it frequently is, care should be taken that it is not decayed or musty.

BRANCHÆ or BRANCHI (from *βραχω*, to make moist), names of the glandulous tumors of the fauces, which secrete the saliva.

BRASIUM (from *βρασσω*, to boil); BARLEY, or COMMON MALT, called also *byne*, by TACITUS, *frumentum corruptum*. From this, all those liquors, such as BEER, ALE, PORTER, &c. are made, which go under the general term, MALT LIQUORS; but an infusion of malt, called WORT, is considered as powerfully antiseptic. It is prepared in the following manner: "Take

of dry found malt, fresh ground, one measure ; infuse it for four, five, or six hours, in three measures of boiling water, then pour off the clear liquor." In cases of inveterate ulcers, and as an application to mortified parts, a poultice made with wort, oatmeal, and linseed powder, with a few spoonfuls of yeast, is of great service.

**BRASSICA**, **CABBAGE** ; a genus of the filiquosa order, belonging to the tetradynamia class of plants.

The species are, I. The *oleracea*, or common white-cabbage. Of this there are commonly reckoned the following varieties. 1. The *sabauda*, or Savoy cabbage. 2. The *rubra*, or red cabbage. 3. The *pyramidalis*, or sugar-loaf cabbage. 4. The *præcox*, or early cabbage. 5. The *peregrina*, or foreign mull-cabbage. 6. The *muscovitica*, or small Russian cabbage. 7. The *capitata*, or large-headed cabbage. 8. The *viridis*, or green Savoy. 9. The *laciniata*, or borecole. 10. The *selenisia*, or green borecole. 11. The *fimbriata*, or Siberian borecole, by some called *Scotch kale*. Of these Mr. Miller thinks the second sort is undoubtedly a distinct species ; as he always found the seeds produce the same, with this difference only, that in good ground the stalks are much larger than in poor land. The other species are, II. The *napo brassica*, or turnip-rooted cabbage. III. The *botrysis*, or cauliflower, which hath two varieties, viz. Purple and white broccoli. IV. The *sylvestris*, or taller shrubby sea-cabbage. V. The *violacea*, with entire, oval, spear-shaped, smooth, leaves, which are indented. VI. The *purpurea*, with oblong, heart-shaped leaves, embracing the stalks, which are entire. VII. The *orientalis*, or colewort with heart-shaped smooth leaves, which embrace the stalk. VIII. The *gongyloides*, wild navew, or cole-seed. To these species Linnæus joins the turnip, navew, and rocket. They are all biennial. All the species are supposed to be only varieties of the smaller kind, which grow spontaneously on our sea-coasts. The white and green cabbages are called *caul des*.

Cabbages have a stronger tendency to putrefaction than most other vegetable substances ; and during their putrifying state send forth an offensive smell, which much resembles that of putrifying animal bodies. It therefore seems reasonable to believe, that they are easily digested in our stomachs, and also very nutritious.—All of them, says Dr. Cullen, may be considered as a supplemental provision only, and are seldom chosen by the quantity of nourishment they afford, but by the tenderness of their texture, and the fulness and sweetness of their juice.

Their use is considerable, as food for horned cattle ; and experience proves them to be void of pernicious qualities though given ever so largely or for any length of time. See **FOOD**.

**BRASSICOURT**, or **BRACHICOURT**, a term used in the manege, and applied to a horse whose fore legs are naturally bended archwise ; being so called by way of distinction from an arched, or bow-legged horse, whose legs are bent by hard labour. See **BOW-LEGGED**.

**BREAD**, a kind of cordial diet, or high feeding, with which horses are sometimes indulged. It is either given with a view of strengthening them when debilitated by disease or over-exertion, or by way of a stimulus to their natural powers, for which latter purpose it is administered by the jockeys to race-horses, to prepare them for the course. We are directed to prepare a bread for weakly horses thus :

1. Take wheat flour, oat-meal, and beans, ground very fine, of each a peck ; anniseed, four ounces ; gentian, and fenugreek, of each an ounce ; liquorice, two ounces ; all in fine powder. Add the whites of twenty eggs well beaten up, and as much strong ale as will suffice to knead it. Then make loaves of this like to house-bread, but not too thick ; and let them be properly baked. Give some of it, but not too new, five or six mornings together, without any provender.

2. Take of wheat-flour, rye-meal, bean-flour, and oat-meal, of each half a peck ; anniseed and liquorice powder, an ounce of each ; and white sugar-candy, four ounces : beat these together with the whites and yolks of twenty eggs, and put to them as much white-wine as will serve to knead it into a paste. Make into great loaves, and bake them well ; and when two or three days old, give it as in the former case.

For **RACE-HORSES**, there are three sorts of bread used with a view of preparing them ; given successively, for the second, third, and fourth fortnights' feeding.

1. Take three pecks of clean beans, and one peck of fine wheat ; mix them together, and grind them into pure meal ; that done, bolt it pretty fine, and knead it up with some fresh yeast, but with as little water as may be : knead it well in a trough, and cover it warm, that it may ferment ; then knead it over again, and mould it into large loaves, in order to be well baked. When they are drawn from the oven, turn the bottoms upward, and let them cool. When three days old, give the horse this bread, but no sooner ; as nothing is more apt to disagree than new bread. Or,

2. Take two pecks of clean beans, with two



pecks of fine wheat, and grind them well together; then bolt, and knead it with yeast, and make it up as in the former case. With this bread, having the crust cut quite away, and oats, or split beans, either together or separate, feed the horse as before, at his usual meals. Or,

3. Take three pecks of fine wheat, and one peck of beans; grind, and bolt them through the finest bolter. Then knead it up with new ale and yeast mixed together, and the whites of twenty eggs, or more, and no water at all, but a small quantity of milk. Work these up, bake and order it as in the former case; and with this bread, and some clean oats and split beans, mixed, or separate, feed the horse at his ordinary feeding times as before.

With the latter object, namely, the use of cordial bread for *running-horses*, we have little concern. It is evident, that in the foregoing receipts, both for these and for horses that are in a feeble state, there are many superfluous ingredients. The occasional use of cordial balls (see BALL), and a supply of such provender as may tempt the horse's appetite, will answer all the purposes intended by these elaborate and *scientific* compositions.

BREAK, a term used in horsemanship. To break a horse in trotting, is to make him light upon the hand by trotting, in order to prepare him for a gallop. To break a horse for hunting, is to supple him, and make him take the habit of running.

BREAKING, a well-known species of discipline exercised on COLTS, for the purpose of rendering them serviceable to man. Mr. JOHN LAWRENCE says, this has not obtained that attention among us, which its importance demands. "There is a general want of well-qualified men in this way, as well as of good farriers. Our chance-medley breeders either break their horses themselves, or commit it to persons equally ignorant; whence the number of our *garroons*, the breed and education of which are so well matched."

He particularly advises teaching the colt a good canter. "If it should be held proper," says he, "to learn him to *leap the bar*, care must be taken that he be not suffered to do it with a heavy weight, which may, in an instant, let down his tender sinews. It by no means injures a colt, of size and bone, to put a collar upon him, provided the draft be light and easy; for instance, plowing light sands; his knowing how to draw, may be of after use and profit.

"The utmost care should be used to teach a colt his paces *distinctly*. You will observe

numbers of horses, trained and ridden by little farmers and countrymen, which confuse and jumble the paces one into the other, shuffling between walk and trot, and trot and gallop, till they acquire a kind of racking pace, from which it is no easy task to reclaim them: or they will, perhaps, go one pace only. If the colt be unfavourably made forward, and it appear from the mal-conformation of his neck, and the ill setting-on of his head, that he can never have a handsome carriage, double care must be taken to give him a well-tempered mouth, the only thing which can possibly render a horse, of this unfortunate description, tolerable.

"Such as shew much blood, or stoop forward, and lounge in their gait, in the usual manner of bred cattle, ought to be well set upon their haunches.

"The future goodness and value of the nag materially depend upon early tuition. If he be defective in bending his knees, let him be ridden daily in rough and stony roads; or if that fail, cause him to be ridden every day, for a month, or more, with blinds. Being blinded, he will naturally lift up his feet. I have experienced the use of it.

"When a colt is refractory, it is usual to tame him, by riding him immoderately over deep earth. It is a silly custom, and often productive of great mischiefs, by weakening the tender joints of a young horse, breaking his spirit, or rendering it totally desolate. Coolness and perseverance are here the requisites; there is no horse with a stomach so proud, which a level course will not bring down.

"The most proper period for breaking a saddle-colt, is the usual one, when *three years old*. In the common mode of performing this premier act of horsemanship, there is very little variation since BARET's days; or rather, it may be said, we have universally adopted his improved method. A head-stall is put upon the colt, and a caversane over his nose, with reins. He is saddled, then led forth with a long rein, and, in due time, lunged, or led around a ring, upon some soft ground. As soon as he has become tolerably quiet, he is mounted, a proper mouth and carriage given, and his paces taught. When sufficiently instructed, he ought (in general) to be dismissed, until the following spring; an early period for serious business.

"There are some, who choose to defer breaking their colts until four years old, for which they often find just cause of repentance, in the strength and stubbornness of the horse; such practice would, however, be at least somewhat more safe, if a favourite method of mine were

adopted, which is, to accustom colts to handling, to the halter, and the bitt, immediately upon their weaning." See the articles BACKING, COLT, and EDUCATION.

BREAST, the superior and anterior portion of the trunk of an animal. In the horse, the breast has four pair of muscles that dilate the chest, and two pair that compress it. These make up that portion of flesh which covers the sternum or brisket, and all the breast from the collar-bone downwards to the pit of the stomach, including most of the foremost ribs. Some of them have their derivations forwards, and from under the shoulder-blades, and vertebræ of the neck and chest, and some backwards from the spines of the lumbar vertebræ and os sacrum; and are most of them so inserted into the ribs, as to render their action of elevating and depressing the chest easy and complete. The intercostal muscles may be considered as forming a part of the breast. These are the external and internal, making up those portions of flesh that fill up the spaces between the ribs. These also dilate and contract the ribs alternately in respiration, and act in concert with the pectoral muscles and the diaphragm. See the anatomical plates which exhibit the muscles of the horse *in front*.

BREAST OF A SADDLE; part of the bow of a saddle. See BOW.

BREAST-PAIN, called by the Italians *grandezza di Petto*, is a distemper incident to a horse, of which the description in books of farriery is exceedingly vague and unsatisfactory. The symptoms of this disorder are said to be "a stiff, staggering, and weak going with his fore legs; besides that, he can hardly, if at all, bow down his head to the ground."

To cure the *breast-pain*, we are directed to bathe the breast with oil of turpentine; and to let blood in both the breast-veins, in the usual place; putting in a rowel if the case be obstinate. Judging from the tendency of these remedies, we may conclude the disease to be an acute one; probably a PLEURISY.

BREAST-PLATE, a leathern strap running from one side of the saddle, across the horse's breast, to the other side, and intended to keep the saddle from slipping backwards, in travelling up rising grounds. It is otherwise called TEE, sometimes the POITRAIL.

BREATH, the air or vapour thrown out of the lungs of an animal. According to a popular opinion, to inspire the breath of a cow is salutary for consumptive persons. Diseases affecting the lungs are vulgarly attributed to the *breath*; as *shortness of breath* for ASTHMA, &c.

In the manege it implies the ease and rest, or repose, which a horse is allowed; as *give your horse breath*; give that leaping horse a *long breathing time* between the turns or repetitions of his manege, &c.

BREATHING, is that alternate contraction and expansion of the lungs and chest, by which animals inspire and expire the surrounding atmosphere; a process essentially necessary to the support of life. From the moment of entering into the world, the air penetrates into the lungs, which were previously filled with a watery mucus, but are then opened for the circulation of the blood. Thus respiration, one of the primary and most important of the vital functions, commences with birth, and is incessantly active; as it cannot be interrupted for many minutes without endangering life. See RESPIRATION.

BREEDING, a method of improving the race of different useful animals, by crossing or mingling one species or variety with another.

Breeding, Mr. TAPLIN says, though a subject of palpable importance to the improvement of that most useful animal the horse, seems to have received less assistance from literary exertion than any other that has ever attracted the time or attention of those naturalists who have, in *other respects*, contributed largely to the advantage and entertainment of the public. He alludes to the care and attention bestowed upon the breed and management of *blood horses* for the turf, at this moment esteemed equal, if not superior, in *speed, bottom, and discipline*, to any other in the world, particularly since the fashionable rage for *Ara-bians* has declined.

The benefits arising from an unremitting perseverance and practical experience of advantageous crosses in *blood, bone, shape, make, and strength*, has rendered the subject interesting not only to the first men of veterinary celebrity, but also to the *breeder and sportsman*.

There are many substantial reasons to be adduced, why the breeders of the northern counties exceed all other parts of England, in the *consistency, strength, fashion, and symmetry* of their stock; for, exclusive of their natural advantages of the most luxuriant pasture and temperate climate for such purpose, they are rigidly attentive to the minutiae of the whole; not only to the shape, make, bone, strength, and uniformity of both *stallion and dam*, but likewise to hereditary defects, blemishes, and deformities, rejecting every probability of *stain* or injury, divested of every penurious consideration.

Mr. Taplin justly ridicules the breeder who, so invincibly attached to the merits of a *blind stallion*, or the virtues of a *spider-legged mare*,



regularly, year after year, increases the number, without in the least adding to the improvement of the species.

In this he is supported by Mr. Marshall, who says, that "in different parts of the kingdom the breeding of race-horses is reduced almost to a science. In the Midland counties, the breeding of cart-horses is attended to with the same assiduity as that which has of late years been bestowed on cattle and sheep; while the breeding of saddle-horses, hunters, and coach-horses, is almost entirely neglected; is left almost wholly to chance;—even in Yorkshire! at least as to females. A breeder, there, would not give five guineas for the best brood mare in the kingdom; unless she could draw, or carry him occasionally to market; nor a guinea extraordinary for one which would do both. He would sooner breed from a rip which he happens to have upon his premises; though not worth a month's keep.

"Those," says Mr. Taplin, "who succeed best, and render the business of breeding a matter of emolument, are *gentlemen, graziers, or farmers*, who adhere closely to the plan of producing a distinct stock for either the *turf, field, or draft*, by a direct systematic union of the requisite qualifications in both *fire and dam*, without falling into the erroneous opinion of forming an *excellent hunter* from a blood-horse and cart-mare; with similar changes eternally ringing by those who fall into the egregious mistake, of expecting that an equal partition of qualities from both fire and dam, will be so critically blended, as to constitute a medium *exactly between both*, when every judicious observer will be enabled to corroborate the opinion, that the event frequently proves the error, and demonstrates a palpable degeneracy from even the *worst of the two*."

In these kinds of connection, the natural sluggishness and inactivity of the old English draft-horse, whether it be in *fire* or *dam*, generally predominates in the offspring; and constitutes an object of disappointment where so much improvement was expected by the cross.

Breeders of this description are continually promoting the propagation of the species, without a single consistent idea, or due regard to the necessary requisites of *country, keep, or peculiar qualifications*. Hence the infinity of horses annually produced; that from want of shape, make, bone, size, and strength, are of no proportional value to the expence they have occasioned. These can pass under no distinct denomination, are applicable to no particular purpose, but become an expensive burthen to the owners, who, too frequently fond of their own production,

fix an imaginary value upon their *imperfections*, and year after year permit them to consume food and fodder that might evidently be appropriated to services of much greater public utility and private emolument.

"The breed of horses most profitable to the graziers and breeders of Lincoln, Leicester, Northampton, and some few other counties, adapted by nature to the purpose, are probably the old English black draft-horses, so remarkable for their bone, strength, and hardness of constitution: these, from their great size, beauty, and uniformity, become, to every curious observer, objects of singular attraction; their wonderful power in business renders them in general request, and the breed is cultivated with the strictest attention to corresponding points and perfections in both sire and dam, little inferior to the class last treated on. STALLIONS of eminence in the above counties are estimated at very considerable sums, and frequently let out to cover from one hundred to two hundred guineas for the season; the stock generally comes into gentle use at two years old, or under, and when brought to a good size in proper time, frequently fetch from thirty to fifty guineas at two and three years old.

"Those horses passing under the denomination of *hunters*, but more particularly the common crosses for *roadsters and hacks*, can by no means prove so generally profitable, when all contingencies are taken into consideration; the length of time they are obliged to be kept on hand and maintained (till at least four years old), with the unfavourable changes they may probably undergo before they can be brought to their ultimate market of emolument most applicable to their different qualifications, render the whole a matter of much greater uncertainty than with horses of the preceding description; for the unavoidable difficulties of cutting, breaking, backing, docking, and nicking, render them serious operations, the success of which cannot be ascertained without encountering a chance of misfortune or failure to injure the subject and affect his value.

Mr. Taplin, however, warns his readers that, notwithstanding these general considerations, it must be remembered they will ever remain subject to the different degrees of success, arising from the variety of particulars already explained. Counties differ so very much in those circumstances which render breeding profitable, that many will not produce horses of size, and the desirable qualifications, at even *treble* their *real value*, when brought to market: for it is a certain and indisputable fact, that part of the king-

dom that is not remarkable for the abundance and luxuriance of its herbage, can ever produce stock of size and value to render breeding profitable; the attempt, therefore, in unfavourable situations, must ever recoil upon the adventurer with additional disappointment.

A brood mare having been obtained corresponding in size, frame, bone, and strength, with the wish of the breeder, and found upon accurate examination to be perfectly free from blemishes and defects, the choice of a *stallion* becomes the object of attention. In him should centre all the points and good qualities that it is possible for a good horse to possess; since, upon a proof exceeding all speculation, the produce, whether male or female, much more frequently acquires and retains the shape, make, marks, and disposition of the sire than the dam. This justifies us in rejecting *stallions* with the least appearance of disease, blemish, or bodily defect, at least if there be the slightest probability of its being transmitted to the offspring.

It is even necessary to descend to the minutiae of symmetry in the *head, neck, shoulder, forehead, ribs, back, loins, joints, and pasterns*, attending to a strict uniformity in the shape, make, and texture of the *very hoofs*: and were it possible (which it is in very few cases) even to ascertain the *temper and disposition* of both sire and dam, rather than be accessory to a procreation of vices or imperfections, that by a more judicious election may be so easily avoided.

Mr. Taplin further recommends a proper examination to discover the state of the *wind, spavins, curbs*, tendency to cracks or *grease*, bad conformation of the *feet*, as corns, thrush, or long and narrow heeled hoofs, either of which would furnish sufficient reasons against him as a *sire*, however well he might be circumstanced in other respects.

*Blind stallions*, he says, may sometimes get colts with good eyes; yet breeding from such had much better be avoided; as he decidedly thinks the odds are against the experiment. In order to justify his opinion of the impropriety and danger of breeding from horses of this description, he states, that, in the year 1773, or 1774, a great number of brood mares in that neighbourhood had been covered by a very popular "*blind stallion*," belonging to the Hon. T. King, near Ripley, in Surrey, whose pedigree, shape, make, figure, and qualifications, were so much extolled, that the want of eyes did not seem at all to constitute an objection. The event, however, was, that about the *third* or *fourth* year, the major part of the colts produced by this stallion became as blind as the sire.

Still anxious to ascertain the hereditary transmission of this defect, Mr. Taplin met with another proof of the fact in the spring of the year 1780, when a grey horse called *Jerry Sneak*, which had proved a tolerable runner, in the possession of LORD SPENCER HAMILTON, came into his hands just as his eyes were failing. This horse covered a few mares in the neighbourhood of *Frimley*, near *Bagshot*; but it was found, in the *fourth* year, that many of the produce were *totally blind*, and the remainder were all likely to become so.

After condemning the unrestrained exercise of the procreative faculty in the stallion, and shewn that it has a tendency only to injure the animal without producing the expected effects in the multiplication of his kind, Mr. Taplin next considers the *season* most proper for bringing the sexes together. As it must be admitted that inconvenience will certainly arise to the *mare* by foaling too early in the spring, or to the *produce* by falling too late in the summer, it will undoubtedly prove more eligible to avoid either of these extremes. Nevertheless, it must be understood, that this circumstance depends in some measure upon the country and situation; the pasturage being of different degrees of forwardness in different counties, at the same period of the year, and no less dependent upon the natural fertility of the soil.

When mares are permitted to take the horse too soon in the season, they bring forth before there is sufficient grass for their support, and being necessarily fed with dry provender, the lacteals, for want of succulent food, become contracted; the very sharp winds also, early in the spring, accompanied with these restraints in food, sometimes so stint the colt (particularly if a wet unfavourable summer and severe winter follow), that the latter never reaches a proper growth, but displays the disadvantage of his early state when arrived at maturity. As there is a very great difference in the nutritive qualities of food, so there is a very material difference in the milk it produces. Indifferent or sparing aliment will certainly produce a thin aqueous impoverished milk, of a quality and in quantity also barely enough to subsist nature, but by no means to give the animal *strength, vigour, growth*, or the formation of flesh and *bone* so generally desirable.

Mr. Taplin attributes to the inconsiderate practice of leaving mares and colts to subsist upon *bare land*, or barren pastures, for the first summer, and perhaps during the ensuing winter, the numerous breed of those horses that come under no express denomination, applicable to no



particular purpose, never rising to any considerable worth, and doing little credit to the breeder.

After enumerating the inconveniences of a mare's dropping her foal *too early*, something consequently appertains to the subject of its falling *too late*. This should never happen when the year is too far advanced, as the *praduce* then has to encounter the daily declination of the sun, the decaying state of the verdure, the impending rains, bleak winds, long nights, foggy days, and the lank weak grass; all which form so many obstacles to improvement (particularly if the winter happen to be severe), that the colt frequently feels the disadvantage, and constantly displays it by the deficiencies in frame and figure.

Allowing, however, for the variation of different counties, it is probable that the last week in April, and the three first in May, may be reckoned the most proper time in the whole year for mares to take the horse, provided it can be effected. To promote this object, Mr. Taplin says, the following methods should be adopted. It is generally perceptible when a mare is *horsing*, and it is likewise universally known she will then take the horse without further trouble; but if not, after sufficient *trials*, she should be taken away, and some addition made to her keep. She should have a substantial feed of good oats and a pint of old beans twice a-day, continuing to offer the horse once in three days till a compliance is effected; after which it will be necessary to offer her the horse at the expiration of eight days (that is, on the *ninth*) from the day of her having been covered. If she again take the horse (which is not at all uncommon) we may reckon from the last time of covering, upon a supposition no conception took place from the first intercourse. On the contrary, should she, after *repeated offers*, persevere in rejecting the horse, the first covering is then supposed to have been effectual; notwithstanding which, the mare, *in either case*, is to be produced and tried with the horse at the end of a *second eight* days, when circumstances must be regulated as at the end of the first, entirely by her compliance or rejection.

Even if the inclinations of the mare do not favour the experiment, Mr. Taplin recommends her being covered, if it happen that the season is so far advanced as to hazard the loss of the year by longer delay. Speaking experimentally, he says he should never hesitate to procure a mare to be covered *forcibly*, if she continued to refuse the horse till the last week in *May*, or the first week in *June*; much rather choosing to take this step, than to lose her contribution to the stock for that

year, or have a colt fall six weeks or two months too late in the season.

Respecting the *exact period of gestation* in mares, Mr. Taplin never remembers to have heard or read any thing decisive, further than the general assertion of their going *eleven months*, but whether these are to be understood as *lunar* or *calendar months* has never been critically explained. "This," says he, "is the more extraordinary when we recollect that *eleven* calendar months want but two days of *twelve* of the *lunar*; nor indeed are there but few instances in which the knowledge of such nice distinction can be productive of much utility; yet it creates some surprise that it has not been particularly noticed by successive naturalists, as circumstances have arisen and may sometimes happen, where such precision would effectually remove a doubt or establish a fact."

The treatment of mares after being covered is regulated entirely by the class to which they belong; for having twice refused the horse at the periods of time before stated, they are then said to be *stinted*, and concluded in *foal*. But this is by no means always the case, for it frequently happens that such mares produce no foals, although appearances are so much in their favour. *Thorough bred* mares (that is, mares whose blood is entirely untainted with any inferior cross, and kept as brood mares for the turf only) are thrown out to grass for the summer season without further consideration; only taking particular care that no geldings, or yearling colts, are suffered to accompany them in or near the same pasture, for some few weeks after conception.

Mares of an inferior description in general use for the saddle, or those for agriculture, may be continued in their common employment with moderation. They seldom suffer abortion but by great and improper exertions; they are therefore very frequently used till within a few weeks of dropping their burthen, without the least fear of inconvenience. This is a fact so universally established, that instances have repeatedly happened of mares obtaining *stolen leaps* when out at pasture, without the knowledge and very much against the inclination of the owners; this circumstance, from various motives, has been considered so prejudicial (where breeding has not been intended), that powerful methods have been adopted, such as the administration of *saivine* in large quantities, violent exertions in drawing, or long and very speedy journeys taken to promote abortion, and those often without the intended effect." In some instances, however, the event is otherwise, as may well be

imagined, and Mr. Taplin's recital of cases, which are exactly in point, lay claim to the attention of breeders in general, as they constitute a basis of experience, upon which a judgment may be formed at what time it will be proper to discontinue the working of mares that are in foal. Some of these clearly ascertain how slight a portion of labour *may* both endanger the dam, and prove destructive to the progeny.

We now come to the crisis of delivery, or the mare's bringing forth; an event so wonderfully accomplished by the almost unerring efforts of *Nature*, that, upon the fairest calculation, not one mare in a hundred suffers in any respect, more than the temporary disquietude, from an exertion of so much magnitude. On the other hand, where difficulty and danger happen to occur, the case becoming preternatural, generally terminates in the death of one or the other, and not uncommonly in the destruction of both. Such an event may probably be owing to the want of timely assistance; the anatomy of the parts not being generally understood, and there being little chance of proper help, whilst our knowledge of *veterinary obstetrics* is so limited. In some instances the dam becomes the victim, in others the foal. Upon the death of the mare, soon after relief from her burthen, it is usual to despair of raising the foal by art, and it is therefore disposed of without delay. But this hasty decision is by no means to be recommended; for although it is exceedingly rare to find a mare that will cherish any other foal than her own, or be easily imposed upon to nourish a spurious offspring, yet there is a great probability (in some cases even a certainty) of bringing the foal up *by hand*. A remarkable instance of this happened to *Milkop*, a horse bred by the late Duke of Cumberland, afterwards the property of Captain O'Kelly, which for a series of years figured at Newmarket.

Foaling *generally happens*, however, without the least danger or difficulty, and nine times out of ten in the night. It becomes the business of the owner or superintendent to dispose the mare in such place of safety, that mischief is at least *not likely* to ensue; and this caution may prove the more acceptable, when it is recollected by every breeder, sportsman, or resident in the country, how very common it is in the season to hear of foals being *smothered* in a ditch, or *drowned* in a rivulet; to the *possibility of which*, the attention of the inadvertent owner had never been even for a moment directed. For some days also, previous to the expected foaling of the mare, she should be kept in rather a sparing than plentiful

situation; to prevent a too great repletion of the intestinal blood-vessels, and consequent compression upon the uterus, which might produce extreme pain, difficulty, and delay in the delivery.

The mare when freed from her burthen, and no circumstance arising to forbid it, should be immediately removed to a healthy and luxuriant pasture, calculated to furnish not only a sufficiency of support for herself, but also for her young. In this, Mr. Taplin says, a proper discrimination is absolutely necessary. Lank, swampy, four grass will certainly expand the frame, sustain the dam, and contribute a flow of milk for the foal, but not of that rich and luxurious quality that is derived from feeding upon the succulent herbage of a meadow, or upland grass in high perfection. Both these contribute so very much to the daily growth and improvement of the colt, that it is a matter of the utmost consequence to the breeder, whose principal object should be to attain every possible advantage in *height, bone, and condition*, previous to the commencement of severe weather, during which the young animal's growth is in general suspended, unless liberally promoted by good food, and proper shelter from the inclemency of the weather.

This is the first step to be taken where no disagreeable circumstances intervene to require a different mode of treatment; but should the mare (by foaling before her time, or in severe sharp winds, a cold wet night, long and painful delivery, or other circumstances) visibly labour under *dejection, languor, loss of appetite*, laying down as if painfully weary, and totally inattentive to her foal, it may be justly presumed, nature has sustained a severe shock from some one of the causes just recited, and this cannot be too soon attended to with a view to the prevention of more unpleasant consequences.

The mare, upon such discovery, should be immediately removed, with her foal, to a still and comfortable situation, as a large open stable, close cow-house, or bay of a barn, where she should be expeditiously supplied with such articles as invigorate the system, increase the circulation, and recruit exhausted nature. About a gallon of water made warm and impregnated with a portion of bran, or oatmeal, may be directly given to allay the thirst which pain, fatigue, or disquietude never fails to excite, as well as to form a kind of substitute during the preparation of a plentiful *masb* of malt, oats, and bran, equal parts, into which should be stirred six ounces of honey; this being given warm to the mare, will not only gently restore the debilitated powers, but also promote an early flow of milk



for the gratification of the foal; the latter being always in some degree obstructed, if not totally suppressed, by the indisposition of the dam.

The mash may be repeated twice every day, with plenty of the best hay, and occasional supplies of the water before mentioned, till her recovery is sufficiently established, and the weather proportionably calm for her enlargement. Should the same lassitude and dejection however continue more than four-and-twenty hours, after these methods have been adopted, the use of the cordial pectoral balls (see BALL) is indicated. Let one of them be given every night and morning in its solid state, or else dissolved in half a pint of gruel, and administered as a drink; or it may be incorporated with each mash at the stated periods, till about a dozen are taken: at the same time continuing the *mashes*, *warm water*, *nursing* (and *clothing*, if needful), till every appearance of danger has subsided.

Some mares, whether from a rigidity of the vessels in not having their first foals till an advanced age, slight colds that obstruct the secretions, or some other cause, are apt to be very deficient in a necessary flow of milk, by which means the foal is deprived of perhaps half the sustenance necessary for his support and expected improvement. Into this matter a minute inspection is necessary for the first three or four days after foaling, by which time there should be an ample secretion furnished for the *full feed* of the foal. However, when this is not the case, the mare should be turned into the richest and most luxuriant pasture that can be obtained, with good soft water at will, with the hope, by this easiest and most natural means, to remove such an obstacle in its infancy; but this not succeeding, and the colt becoming perceptibly *stinted* (which may be plainly perceived, not only by his wasted appearance, but incessant and fruitless attempts to obtain supplies), artificial means must be adopted to solicit a due discharge of this very necessary fluid, without which every expectation of the foal's growth and gradual improvement must be rendered abortive.

The object can only be accomplished by conveying a larger portion of nutritious aliment into the system of the mother: experience, however, proves, that even the advantages of good pasture are not always equal to this, and that sometimes, owing to a vitiated or diseased state of the stomach and intestines, this food, excellent as it is of its kind, passes so rapidly and indigested through the body, as to afford but little of that which is required for the subsistence of the foal.

This state of the mother should be counteract-

ed by such means as are calculated to strengthen the digestive powers, animate the circulation, and produce a plentiful supply of chyle for the necessary secretions. To effect this, give a warm mash every morning, composed of brown malt three quarts, and one of cracked oatmeal (commonly called *grits*); let the water be poured on boiling hot, and repeatedly stirred up till of a proper warmth, when it may be given in either field or stable, unless any severity of weather should render the latter most eligible. In the evening of each day, give half a gallon of good sound mealy oats, with the addition of a pint of old beans, either whole or split, as will be most readily taken by the mare; these feeds, exclusive of their great nutritive property, will assist medicinally in retaining the aliment in the first passages by their restraining quality.

This plan should be persevered in for six days without intermission, when an increased supply of milk from the mare may be expected; but should her improvement not become very perceptible, she may be deemed a *very poor nurse*, and no other extraordinary means need be attempted to assist the imperfection; but care must be taken to wean the foal very early in the ensuing winter, upon a presumption, that at the autumnal decline of grass, her slender portion of support for the foal will fail also.

How far it may be prudent, to breed a *second time* from a mare whose powers are thus evidently deficient in furnishing such a portion of milk as is absolutely necessary to render the experiment of breeding successful, must be left entirely to the decision of the parties interested in the event; but in so extensive a business as breeding for either the turf, field, road, or draft, no blind prejudice or insatiable prepossession should influence the proprietor to persevere, with any palpable points, defects, or disqualifications against him.

On the common practice of soon taking the mare again to horse after a successful foaling, a variety of opinions have been transmitted from father to son. It has been the invariable practice with some, to offer the mare a horse on the *fourth* day after foaling, to insure "the greater chance of immediate conception;" with others, "to promote an increased flow of milk;" and an established opinion, "that the horse will be more readily taken *at that time* than at any future part of the season." These are opinions in themselves perfectly inoffensive, and of so little consequence, that they require no animadversion; it should, however, be considered, that by having the mare covered so very soon after foal-

ing, you bring her foal three weeks or a month sooner the next season than the year preceding; and should that happen to have been only in proper season (viz. the latter end of April or beginning of May), you encounter the probability of much inconvenience; for this calculation remaining unattended to, the produce may fall early in the month of March, not only under the disadvantage of bleak winds and bad weather, but before there is a single blade of exuberant pasture to subsist the dam, or encourage the growth of her issue.

Whenever a necessity absolutely exists for subsisting the mare entirely upon *dry food*, the secretion of milk must be inevitably reduced, and the improvement of the foal proportionably obstructed. Hence no one will ever deviate so much from the line of his own interest, as to promote the propagation of what must, at the time of its birth, be in a great degree deprived of its most natural means of existence; a deficiency not to be supplied by any adequate substitute.

The mare then, after her foaling, if she is intended to continue her services as a brood mare, must be managed accordingly. The time for her being covered which is most applicable in one respect, may not prove always the most so in another, as it should be regulated, if possible, to avoid the before-mentioned extremes of the foal falling too early or late in the season. Most mares will take the horse on either the *ninth, fifteenth, twenty-first, or twenty-seventh* day after foaling; of these, neither will occasion any great variation in the time of her foaling the next season, though Mr. Taplin would adhere to either of the *two last*, unless the mare had foaled late in the year, when the *first* or *second* should certainly be preferred. After covering, or refusal of the horse, she should continue to be tried at the stated periods already specified in the earlier part of this article; always concluding the mare to be stinted, and in a state of conception, when she has repeatedly declined the horse in the manner described.

Mr. Taplin condemns the almost universal practice of continuing to breed year after year, from the same mare, till nature, over-driven, thwarts the attempt by the occasional introduction of a barren year, in direct opposition to the intent of the breeder, demonstrating upon *compulsion* the necessity of what he did not intend to comprehend by choice.

"The very means," says he, "by which the embryo is generated, and the nutriment required, not only to support its growth during the months of gestation, but the subsequent term of its *suc-*

*tion*, evidently point out the consistency of some respite for the dam, to acquire additional strength after the incessant labour of collecting a double portion of food to subsist herself and support her offspring."

Many, who, unwilling to "lose the year," are regulated implicitly by the dictates of their own mercenary sensations, affect to believe, that the mare, producing a foal every year, will continue her stock equally strong, healthy, and valuable, with those that are favoured with occasional and necessary intermissions. This, however, is not the fact; for such a succession will degenerate in bone, size, strength, and value, when produced from the same mare for a series of years together; while, on the contrary, a *single year's fallow* in every three or four, will prove, in the aggregate, decidedly in favour of the breeder.

Having considered all that appertains to the propagation and preservation of stock, we now come to the time and manner of *weaning*; a matter that must ever be regulated much more by the circumstances of the case than the state of the season.

The difference of a mare foaling early or late in the season; her remaining fallow, or having taken the horse and renewed her conception; the forward growth and rapid improvement, or puny and backward state, of the foal; are all *conditional matters* upon which a decision is to be formed. For instance, where the mare has dropped her foal early in the season, has again taken the horse, and the foal at her foot has improved properly, and acquired strength and size previous to the commencement of severe weather; such foal should be taken from the dam so soon as the decay of pasture perceptibly occasions a reduction in the supply of milk; and this separation becomes the more immediately necessary upon an established truth, that the longer a foal is permitted to draw a compulsive secretion of milk from a mare again advanced in foal, the more will the subject *in embryo* be consequently impoverished and restrained, when thus deprived of its portion of nutriment. The impropriety of this must be evident to the most uncultivated person, and it becomes a matter of surprise how so absurd a practice can ever be supported; since it would be nothing less than supposing nature accessory to the perversion of her own laws, to admit, that an animal of advanced growth should longer subsist upon the *very vitals* of its dam, after her again advancing in pregnancy.

In the peculiar case where the mare has foaled late in the year, and has not been again put



to horse, or where the retarded and unpromising state of the foal renders care and nursing absolutely necessary; in either of these, every means should be used to promote the strength and growth of the foal, during the inclemency of the winter season, which, it should be remembered, he is not nearly so well enabled to encounter, as one of a greater age possessing the usual advantages. In such instances as these, although the flow of milk from the dam will be very considerably checked by the alteration of food dependent upon the different seasons, yet with frequent supplies of good hay to the mare, it may be proportionally assisted, and with occasional aids of proper food to the foal, great advantages may be derived from letting them run together through the severest months of the winter; to evade the ill effects of which, shelter by night will very much contribute.

Such a variety of cases, however, may occur, and these attended with so great a complication of circumstances, that no precise instructions can be adequate to the subject. These must always be subservient to the discriminating judgment of the owner or superintendant, upon whose favourable opinion or prejudice perhaps will depend the success of the whole proceeding. When unexpected circumstances arise, no particular week or month can be fixed for weaning; as some of these contingencies may render it advisable in the earliest month of the winter, or, on the other hand, protract it to the latest in the spring; which must, after all that can be offered on the subject, depend entirely upon the discretion and interest of the parties concerned.

Waving, for these reasons, any further animadversions respecting the time, we now advert to the manner of effecting this change, which is sometimes attended with difficulty, but seldom or never with danger, particularly when regulated by due attention to *circumstances, season, state, and condition*; considerations that generally ensure their own reward. Towards the conclusion of the year, the foal acquires some relish for pasture, but unluckily begins to enjoy it just at the autumnal period, when long dreary nights, damp fogs, and frequent rains, take place, and when the enlivening rays of the sun, no longer conduce to its quantity or sweetness. The requisite nutriment from the dam too becomes not only reduced in quantity, but impaired in quality. Thus divested in a great degree of its balsamic and nourishing sustenance, the young animal, dictated by the strong feeling of necessity, gradually finds an adequate substitute in the exterior means of subsistence, and in a few days becomes perfectly reconciled to the food allotted him,

provided it be applicable to his state of infancy, good in its kind, and properly selected.

Of these there are various kinds, that are more or less preferred by different persons. *Oats, bran, chaff, barley, wheat, hay, or straw*, have each their advocates; but we decline the consideration of the question in this place, reserving all that is necessary to be said for the article **FOOD**.

The business of weaning will be in some degree more easily reconciled by permitting the foal to feed with the mare, for a few days, upon the *dry food*, previous to their entire separation; and, generally speaking, that food should be adopted which is most adequate to the probable value of the foal; for, notwithstanding all that can be urged in defence of breeding systematically, to produce stock of shape, strength, figure, fashion, bone, or speed (according to the purposes for which they are designed), there will still remain a more than *moderate proportion* of the breeders formerly described, who must inevitably continue to propagate stock, not worth the *proper support* of even the first twelve months.

No doubt can be entertained but the sweetest hay, with a daily portion of the hulled oats, and a trifling addition of bean meal, would be as perfectly grateful to the weaning foal of a *five-pound pony mare* as to the palate of a son of **HIGHFLYER**; but it is natural to conclude, that *self-interest* will, in this as in more important points, regulate the conduct of the majority, and that mares and colts will in general be supported with a mere reference to *profit and loss*, however some injudicious exceptions may now and then occur.

Mr. Taplin concludes his observations under this head, with an additional injunction to breeders of every denomination, to endeavour, in the *two first winters*, to acquire all possible advantage in size, strength, and bone; which, he asserts, depends as much upon the judicious and plentiful supplies of food, as the qualifications of horse and mare, so implicitly relied on, and eternally echoed by those subordinate cavilists who possess the opinion, but not the means to justify their assertion. For size, strength, and bone, being thus constantly promoted by care and attention, they not only prepare the frame of the animal for a ready acquisition of flesh in that season of the year when nature dispenses her gifts with a more liberal hand, but being *once obtained* can never be obliterated; while, on the contrary, the first opportunity of acquiring those perfections being totally lost by an injudicious restraint in point of sustenance during the *first two years*, the stock is more or less *stunted*,

and an irreparable deficiency occurs that can never again be supplied in the *same subjects*.

The breeding of other cattle belongs to the grazier and agriculturist, for which reason we limit our observations to the propagation and means of improving the breed of horses, in which the latest veterinary writers seem to accord with Mr. Taplin's opinions.

BREGMA (from *βρεχω*, to moisten), these bones being, in young animals, not only tender, but very moist. They are also called SINCIPUT, and PARIETALIA. See bones of "*the head*" under the article SKELETON of the HORSE.

BRICKS, OIL OF, an *empyreumatic oil*, used by farriers to cure bruises, strains, &c. in cattle. It is prepared in the following way :

*Oil of bricks.*

Heat bricks red hot, and quench them in olive oil, till they have soaked up all the oil : then break them into pieces small enough to be conveniently put into a retort ; and distil with a sand-heat gradually increased. An oil will arise, together with a spirit, which is to be separated from it.

This preparation has had a place in most dispensaries, under the pompous names of *oleum philosophorum, sanctum, divinum, benedictum*, and others, as improper as that under which it stands above. It is really oil of olives rendered strongly *empyreumatic* by heat. The spirit, so called, is no more than phlegm, or water, tainted with the burnt flavour of the oil. In human diseases it has also been celebrated, particularly *against rheumatic pains, deafness, &c.* and has sometimes been given inwardly.

BRIDLE, a contrivance made of straps of leather and pieces of iron, designed to keep a horse in subjection to the will of his rider. It is so termed when all its appurtenances are fixed together in the several parts of it for the government of a horse, and they are these :

1. The *bitt* or *snaffle*, which is the iron-work put into a horse's mouth. Of these there are several sorts, which see under the article BITT.

2. The *head-stall*, being two small leathers that come from the top of the head to the rings of the bitt.

3. *Fillet*, that which lies over the forehead under the foretop, if the horse has trappings. This is usually adorned with a rose, or the like, or leather set with studs, or braided.

4. The *throat-band*, being that leather which is buttoned from the head-band under the throat.

5. *Reins*, the long thong of leather that comes from the rings of the bitt, and being cast over the horse's head, the rider holds them in

his hand, and by their means, guides the horse as he pleases.

6. The *button and loop* at the end of the reins, by which it is fastened to the ring of the bitt, the other end of the reins having only a button so large that it cannot go through the ring of the bitt on the other side ; this is called a running rein, by which a horse is led at a good distance, and has liberty to leap a ditch, or mount a hedge.

7. The *nose-band*, a leather that goes over the middle of the nose, and through the loops at the back of the head-stall, and so buckles under the cheeks ; this is usually adorned.

8. A *trench*.

9. A *cavesson*, being a false rein to hold or lead a horse by.

10. A *martingale*, which is a thong of leather, the one end fastened under the horse's cheeks, and the other to his girth between his legs, to make him rein well and not cast up his head.

11. *Chaff-balter* : a woman's bridle is the same, only it is double reined.

Our bridles, at present, are either *curbs*, double and single ; or *snaffles*, either single, or accompanied with a *check-cord* and rein ; the reins either brown or black leather, quite plain, the head-stall without a nose-band, or any ornament of ribband in front.

The curb-chain, and its application, is well known. The double bridle has two bits, snaffle and curb ; the latter with checks moderately long, light, and thin, and with a joint, like the snaffle, or whole, and known by several names, according to its form and effect.

The use of a *curb-bridle*, which, indeed, is generally the most proper for road service, is to bring the horse's head in, to lift up his fore-quarters, and set him sufficiently on his haunches. This, of course, contributes to his going light in hand, and safely above the ground. The curb is to be used in those two paces, where stride is to be repressed, to wit, the trot and canter : in the walk and gallop, where a horse cannot lunge out too far, the snaffle is ever the most fit.

The proper way to ride with the curb bridle, is to hold both reins together, at discretion, curbing the horse no more than is absolutely necessary ; for which reason, the single curb-rein, with which the horse's mouth finds no favour, is an unfair and foolish contrivance. By being constantly curbed, his mouth becomes so case-hardened, that you are even where you set out, if you intend an improvement ; relieved, indeed, it is true, from the mighty trouble of holding two reins.

It is necessary to observe carefully, that the



curb-chain be not fastened above the snaffle-rein, and that it be hooked sufficiently loose, not to press too severely upon the horse's mouth.

The *snaffle*, it is remarkable, used to be formerly reckoned one of the severest bits; at present, it generally signifies a mild one; although, it is true, we have *hard* and *sharp* ones for some horses, the benefit of which is very problematical. The check, is a cord in the place of the curb-chain, which compresses the under jaw, and is intended for a hard-pulling horse. This is chiefly in use upon the course. In swift action, whether it be gallop or trot, the horse must have the free use and extension of his neck and head. In a gallop, the curb lifts a horse up too much, and besides, he cannot pull fairly and well against it.

Our general practice of breaking colts with large and mild bits, is highly rational; and if sharp bits, of all kinds, were entirely excluded from our equestrian system, the change would be full as much in favour of our own convenience, as of the feelings of the animal. If the mouth of a horse be already too hard, such rigorous means will surely never contribute to soften it.

The *martingale* was invented two or three centuries past, by EVANGELISTA, a celebrated Professor of horsemanship, at *Milan*. Its utility, in colt-breaking, is unquestionable. The running martingale, only, is safe to ride with upon the road, and many people even hunt, and take their leaps with them. It is scarcely possible to ride those horses without martingales (particularly in the summer season) which have acquired the troublesome habit of tossing up the head; nor do we know of any other means to reclaim them.

Pliny assures us that one Pelethronius first invented the bridle and saddle; though Virgil ascribes the invention to the Lapithæ, to whom he gives the epithet of *Pelethronii*, from a mountain in Thessaly named *Pelethronium*, where horses were first begun to be broken. The first horsemen, not being acquainted with the art of governing horses with bridles, managed them only with a rope or a switch, and the accent of the voice. This was the practice of the Numidians, Getulians, Lybians, and Massilians. The Roman youth also learned the art of fighting without bridles, which was an exercise or lesson in the manege; and hence it is, that on the Trajan column, soldiers are represented riding at full speed without any bridles on.

BRIDLE-HAND, is the horseman's left-hand, the right-hand being the spear or whip-hand.

BRIDON, or BRIDOOON, in the manege, pro-

perly denotes a snaffle, in contradistinction to a bitt or bridle. The French say, that the English use no bridles, but only bridoons, except in the army; a horse never goes so well nor so sure with a bridoon, unless he have been first broke to the bit.

BRIGHT-BAY; a common colour for a horse. See COLOUR.

BRILLANT. A brisk, high-mettled, stately horse, is called *brillant*, as having a raised neck, a fine motion, and excellent haunches, upon which he rises though never so little put on.

BRILLS, a vulgar name for the hair growing on a horse's eye-lids.

To BRIM. A sow is said to brim, or go to brim, that is ready to take boar.

BRIMSTONE. See SULPHUR.

BRINGING IN A HORSE, in the manege, is the keeping down his nose when he boars and tosses it up to the wind. A horse is brought in, by a good strong branch.

BRIZA (from *ἔριζω*, to make sleep; because bread made of it is said to cause drowsiness); SPELT WHEAT.

BROKEN-WIND, a disease common to horses that have been severely exercised, or hard ridden. The state of the lungs in this disease having been fully ascertained by dissection, the latest veterinary writers agree as to the nature and causes of this malady, but little has been suggested on the subject of the cure. Mr. Ryding says, "It frequently happens, that when the action of the blood-vessels of the lungs have been increased to a great degree, and the inflammation produced terminates without suppuration or gangrene, that the coagulable lymph of the blood is extravasated, or thrown into, and plugs up a part of the air-cells, which prevents them from performing their proper functions, and the animal not being able to take in the usual quantity of air, is obliged to inspire twice in the time which before only took up one inspiration, and this causes a double heaving of the flank or belly.

"The other cause of broken-wind is violent coughing, or violent exercise, immediately after the stomach has been distended with much food or water. This occasions a great oppression of the chest, and difficulty in breathing, and a rupture of the air-cells is the consequence. These ruptured air-cells form on the surface or edges of the lungs, and are never completely emptied in expiration. When this is the case, the animal not being able to expel the air at one expiration, another immediately takes place, and is attended with a very high rising of the flank, which suddenly falls. This action goes on in regular succession.

"It is observable, that large quantities of wind are found in the intestines of broken-winded horses, which may probably be owing to the great and long-continued action of the belly." May we not rather attribute the latter to one of these two causes—either to the loss of tone in the intestines from constitutional debility, or to the passage of air down the œsophagus, in the repeated efforts made by the animal to inspire whilst *hard ridden*?

Mr. Richard Lawrence takes a more enlarged view of the causes of this disease. He says, broken-wind "may be brought on by an effusion of water in the chest, or by lymph being thrown out into the cells of the lungs, and possibly by a paralysis of the diaphragm, or by the destruction of part of the lungs in consequence of the inflammation. In any of these cases respiration will be laborious, and the animal will become unfit for violent exertion. However, the most common appearance of the lungs in broken-winded horses, is a general thickening of their substance, by which their elasticity is, in a great measure, destroyed, and their weight specifically increased, at the same time that their capacity for receiving air is diminished. During life, the lungs entirely fill the cavity of the chest, so as to leave no space between their outward surface and the inward surface of the ribs; thus they dilate and contract, following up by their own elasticity the action of the ribs and diaphragm. Hence it is probable, that adhesions of the lungs to the ribs are not so injurious to respiration as might be imagined.

"If the chest is punctured in the dead subject, the external air rushes in, and the lungs collapse; but if the horse was broken-winded, the lungs do not collapse, which proves that they have lost their elasticity. This state of the lungs sufficiently accounts for the difficulty of respiration, for, as their faculty of dilatation is destroyed, the ribs cannot expand without forming a vacuum in the chest, which the pressure of the external atmosphere prevents, which may be readily perceived in the case of broken-wind, for then the intercostal muscles are so strongly retracted, as to form a deep furrow between every rib, as well as a depression in the flanks. On this account, air is received into the lungs with great difficulty, but its expulsion is not so difficult, as the return of the ribs and diaphragm naturally force it out by their pressure. Thus, in broken-winded horses, inspiration is very slow, but expiration is sudden and rapid, as may be seen by the flanks returning with a jerk. If there is water in the chest, the horse never lies down, as the pressure which would

take place in that situation, would produce suffocation instantly.

Of the less violent affections of the lungs, as the cause of these general symptoms of broken-wind, Mr. Lawrence says—"The most frequent of these are manifested by coughs, which may be divided into the inflammatory and chronic kinds. In the inflammatory cough there is generally some discharge from the lungs, but in the confirmed chronic cough there is seldom any discharge whatever. As the horse does not expectorate through his mouth, the mucus of the lungs is coughed up into the nose, from whence it is afterwards discharged by the action of snorting or sneezing. Hence, if a horse snorts after he coughs, he is generally supposed to be (although the reason is not known) found in the viscera. In the human subject, asthma is commonly divided into two kinds, the humoral and the spasmodic. Veterinary practice has not hitherto furnished any proofs, that the horse is subject to asthma of the spasmodic kind; and from what may be collected from the symptoms of broken wind, it is probable that the latter disease in horses is totally different from the asthma in the human being. For the attacks of asthma are usually periodical, whereas the effects of broken-wind are constant, though not always equal, their violence being increased by exercise, which naturally demands more frequent and more copious respiration, as well as by some other cause. Dissections of the dead subject afford little or no proof of the nature or existence of nervous complaints, hence it is not possible to ascertain whether a paralysis of the diaphragm may constitute one cause of broken-wind. We must therefore recur to such causes as admit of ocular demonstration, and, of these, none are so distinct as the general thickening of the substance of the lungs, just mentioned."

"From a consideration of the causes of broken-wind," Mr. Ryding says, "it must evidently appear, that it is an incurable disease, and our intention must be to mitigate it as much as possible. This is best done, by giving the animal small quantities of the most nutritious food and water at a time, and often, in the day; by these means preventing, as much as possible, pressure on the chest, to which may be added occasional doses of gentle purging medicines, to keep the body open."

Mr. John Lawrence very properly recommends an early attention to the symptoms. He says, "Be it remembered, that *purfive* horses demand a punctilious regularity in physic and exercise.

"The disease may probably have arisen from



want of timely evacuation, so that occasional physic and bleeding should not be neglected. Mercurial physic is indicated, being powerfully deobstruent, perhaps the saline course, from its diuretic effects, may be peculiarly useful in this case.

“ Give as little hay as possible, and that of the hardest and best kind, on the ground, or in a basket; mashes, and an extra quantity of corn. Carrots are *specific* in this case. If the patient be even but a middling cart-horse, it will pay to keep him to this regimen, instead of the common garbage diet. A constant run in upland pasture, where the bite is not too large, suits these horses best; but if once allowed this, there seems a necessity for it ever after, for if taken entirely into the stable again, their malady becomes intolerable. It is well known, although not always remembered, that asthmatic horses should be put to their speed by degrees, and that they are incapable of any violent extremes.” See ASTHMA.

Mr. Lawrence further reminds us, “ that medicines intended to open obstructions in the lungs, have *the whole tour of the circulation* to make, and that they have not the power, as the farriers suppose, *immediately* to enter the doors of the disease, and eject the tenant.

Take of cordial ball, half a pound;  
Balsam of Peru, two drachms;  
Annifated balsam of sulphur, three drachms;  
Flowers of Benjamin, two drachms and a half;

Make the mass with burdock seeds in fine powder, and give a ball the size of a pigeon's egg, when going out to exercise.”

Mr. Lawrence says, “ if burdock seeds cannot be obtained, liquorice powder may be substituted; but it may be worth while in a regular stable to make a reserve of that seed.” This is drawn from Gibson and Bracken, but by no means thought an efficacious remedy by Mr. Lawrence, who adds the following:

Take of cordial ball, one pound;  
Powdered squills,  
Barbadoes tar, each two ounces;

Make up the mass with honey. Or,

Take antimony in the finest powder, eight ounces;  
Brimstone flowers, four ounces;  
Gum ammoniacum,  
Pounded garlic,  
Hard soap, of each four ounces;  
Venice turpentine, three ounces;

Anniseeds,  
Bay-berries,  
Linseed powder, each two ounces;

Make the paste with honey, and oxymel of squills.

“ Give a ball daily for a month; omit a month, and then repeat, having a strict care as to regimen.

“ This,” says Mr. Lawrence, “ is my favourite form, but I do not promise it shall cure a broken-wind; I will engage, however, that it will mitigate the symptoms of that disease, and render the horse more useful: it is also an excellent *preventive* when the danger is apprehended. Soften the ammoniacum by pouring a little vinegar upon it, letting it stand twelve hours; pick out any small stones or foulness, and pound it by itself; peel the garlic, add, and pound it with the gum.”

He also mentions, “ A course of tar-water, about four times the strength of the common; a quart or two to be given in the horse's drink.

“ The vitriolated copper, joined with emetic tartar, has formerly succeeded in a few instances of inveterate asthma, when every other known remedy had failed.

“ The case of pulmonary abscess in horses must surely be hopeless, as well from the common reason of the difficulty of effecting union of divided parts, where incessant motion takes place, as the consideration, that the constant labour expected from the horse still enhances the difficulty. If any remedy, it must be pure air in upland pasture; the patient to have no disturbance for at least twelve months.” See RESPIRATION.

BROKEN-KNEES, a well-known accident, or blemish, common to horses. Mr. TAPLIN gives the following instructions respecting the treatment:

“ From what cause soever this misfortune may arise, the *first step to relief* will be to wash the parts well with a sponge and warm water, thoroughly cleansing the wounds or lacerations from every retention of gravel or sand; for these will evidently irritate and inflame the tender parts, and be productive of a discharge which may often be entirely prevented by gently wiping dry after the use of the sponge, and plentifully embrocating the parts with *camphorated lead-water*, bandaging over a pledget of tow wet with the same, repeating it once or twice, if circumstances should render it necessary. This should be continued, that a crust or cicatrix may be formed to render unctuous or greasy applications unnecessary; but should the wound or

laceration be so violent as to produce great inflammation, *suppuration* must ensue, and ought to be encouraged; to this end apply a *poultice* of the common kind, and let the cure be afterwards performed by regular applications of *digestive ointment*."

Mr. John Lawrence suggests the possibility of causing the hair to grow smooth and even with the old, after these accidents, by binding a piece of sheet-lead on the part after the wound is healed. He also speaks of a contrivance by which the knees of a valuable horse may be protected against this and other similar accidents. See HOSE.

BRONCHIA (from *βρογχος*, *the throat*). See ASPERA ARTERIA.

BRONCHIAL ARTERIES. These sometimes go from the fore side of the superior descending aorta, sometimes from the first intercostal, and sometimes from the arteriæ œsophageæ. Sometimes they arise separately from each side to go to each lobe of the lungs, and sometimes by a small common trunk, which afterward separates towards the right and left hand, at the bifurcation of the aspera arteria, and accompany the ramifications of the *bronchia*.

The *bronchial* artery on the left side often comes from the aorta, while the other arises from the superior intercostal on the same side; which variety is owing to the situation of the aorta. Sometimes there is another *bronchial* artery, which goes out from the aorta posteriorly, near the superior intercostal, above the *bronchialis* anterior.

BRONCHIAL GLANDS. At the angle of the first ramification of the trachea arteria we find, on both the fore and back sides, certain soft roundish glandular bodies, of a blueish or blackish colour, and of a texture partly like that of the thymus, and partly like that of the thyroid gland. There are many such-like glands at the origin of each ramification of the *bronchia*. Their office is to separate a mucus to lubricate the lungs: they are different both in colour and structure from the conglobate and lymphatic glands.

BRONCHOTOMY, BRONCHOTOMIA (from *βρογχος*, *the wind-pipe*, and *τομή*, *to cut*). See TRACHEOTOMY.

BROOM. See GENISTA.

BROUILLER, a French word, used in the riding academies, to signify that a horse, when put to any manege, plunges, traverses, and appears in disorder. Hence they say, this man is not master of his legs, he makes his horse *brouiller*, i. e. makes him traverse and cast down his head; the spur being too hard for him.

BROW, another name for the FOREHEAD of an animal; or, in the language of anatomists, the *os frontis*.

BROWN, the common colour of horses and other cattle. See COLOUR.

BRUISES, the consequence of BLOWS, falls, or other accidents to which all animals are liable. Mr. WHITE says, "In recent bruises, fomentations are the most essential remedies—when they are violent, a considerable degree of inflammation may be expected to supervene, it will then be proper to give a laxative ball, and to bleed moderately near the affected part.

"If abscesses form in consequence of a bruise, discharging large quantities of matter, particularly if the matter is of a bad colour and an offensive smell, the wound also appearing dark-coloured and rotten, indicating approaching mortification, the horse's strength must be supported, by allowing him a large quantity of corn; and if he can be made to eat malt, it will be found still more effectual. If the appetite goes off, he must be drenched with good water-gruel, and strong infusion of malt: it will be necessary also to give the cordial ball for mortification, once or twice a-day. Stimulating applications to the part, such as camphorated spirit and oil of turpentine, equal parts, are of great use. Should a hard callous swelling remain in consequence of a bruise, the following embrocation is to be well rubbed into the part twice a-day; and if it does not succeed in removing it, recourse must be had to a blister."

#### *Embrocations for Bruises.*

- (No. 1.) Take Camphor, half an ounce;  
Oil of turpentine, an ounce;  
Soap Liniment, an ounce and a half: Mix.
- (No. 2.) Take Tincture of cantharides, one ounce;  
Oil of origanum, two drachms;  
Camphorated spirit of wine, six drachms: Mix.
- (No. 3.) Take Oil of turpentine, half an ounce;  
To which add gradually  
Vitriolic acid, one drachm;  
Oil of bays, two ounces: Mix.

As a remedy for a bruise caused by unequal pressure from a saddle, Mr. John Lawrence recommends a fomentation of stale urine in which hay has been boiled, and red-hot iron quenched; with the addition of some verjuice.

BRUNELLA. COMMON SELF-HEAL; called also *prunella*, *consolida minor*, and *synphytum petraum*. It is the PRUNELLA VULGARIS Linn.



It is a small plant with square stalks, and cut leaves that are set in pairs; the flowers are purple-coloured, forming short thick spikes. It is perennial, grows wild in pasture grounds, and flowers in June and July. Its taste being slightly austere and bitter, it hath been much used in fluxes, hæmorrhages, and in gargarisms, to remove aphthous exudations in the mouth, &c. Miller's *Bot. Off.*

BRUTIA; an epithet for the most resinous kind of pitch, therefore used to make the *oleum pissinum*, said by Ray to be the same as the pisselæon of the ancients; for that was called by them *oleum picinum*; and was, according to Galen, a medicine made of oil and pitch mixed. The *pix brutia* was so called from *Brutia*, a country in the extreme parts of Italy, where it was produced. The Brutti were a people of Calabria, over-against Sicily. The *pix Brutia* was made from the *tada*, MOUNTAIN-PINE.

BRYGMUS (from βρυγμω, to make a noise). A peculiar kind of noise, such as is made by the grating of the teeth, or their gnashing.

BRYON (from βρυω, to germinate). Called *spalachnou* by some: a kind of moss found on cedars, oak, &c. It is astringent.

BRYONY, BRYONIA (from βρυω, to abound), so called from its abundance. It is a name for the WHITE JALAP; also BRIONY. Botanists enumerate seven or eight species; but the most common are the two following: the BRYONIA ALBA, WHITE BRIONY; called also *vitis alba*, vel *sylvestris*; *agrostis*, *ampelos*, *archeostiris*; *echetosis*, by HIPPOCRATES; *bryonia aspera*; *cedrostis*; *chelidonium*; *labrusca*; *melothrum*, *ophrostaphylon*; *psilotrum*; WILD VINE. This species is most in use. It is the BRYONIA ALBA *foliis palmatis utrinque callosisq; cabris, bacis rubris*, of LINN. Class MONOCIA. Ord. SYNGENESIA. Gen. Pl. 1093.

It is a perennial rough plant, grows wild in hedges, and climbs up bushes, with curled tendrils; the leaves are in shape somewhat like those of the vine. The flowers are bell-shaped, of a greenish-white colour, and monopetalous; the flowers are succeeded by red berries, containing an extremely viscid pulp with small seeds; the root is large, as thick as a man's arm or leg, of a brownish or yellowish colour on the outside, and white within.

These roots are taken up in spring; they afford much thin milky juice, which hath a disagreeable smell, and a nauseous, biting, bitter taste; if it is applied to the skin, it blisters. If the root is dried, or its milky juice is inspissated, they lose most of their acrimony and ill scent.

Externally, this root is strongly discutient.

Dr. Alston says, that in swellings, strains, and stiffness of the joints, in the human subject, he has experienced surprising effects from it. According to BERGIUS, it is a *purgative*; *hydragogue*, and *diuretic*: the fresh root, emetic: it has chiefly been employed in *dropsies*, *asthma*, and *epilepsy*, and has been advantageously employed in the diseases of cattle. As a discutient, the CATAPLASMA BRYONIE COMPOSITUM is approved by the College, and thus made. Take of bryony root, three ounces; elder flowers, one ounce; gum-ammoniac, half an ounce; muriated ammonia, two drachms; camphorated spirit, one ounce. Let the bryony and elder be boiled till they become tender, then bruise, and add the gum-ammoniac, previously dissolved in vinegar; the muriated ammonia and camphorated spirit must be afterwards added, and the whole mixed together in form of a cataplasim.

BLACK BRYONY; called also *tankus*, *sigillum beatæ Mariæ*, *chironia*, *apronia*, *gynecanthe*; BLACK VINE, and the CHIRONIAN VINE. This plant climbs without tendrils, the leaves are smooth, and like those of the great bind-weed; it bears black berries; the roots and leaves are recommended as expectorant. Raii Hist. According to GERRARD, it is called *agriampelos*.

BUBALUS (dim. of βους, an ox). The BUFALO; called *buffelus*, *bos Indiana*, and *buffal*. It is a kind of ox. This name it hath from the country in Asia, from whence it was brought into Europe. See BOS.

BUBO (from βουλον, the groin). VOGEL names it *bubon* when in the groin; it is also named *cambuca*; *cambuca membrata*; *codocole*; by some it is called *fugile*, and *adin*. Any tumid gland in an animal, which is inflamed, or tends to suppuration, is a bubo; but it is generally understood only of those glands which are in the arm-pits, or the groin. The cure is effected either by using means to counteract inflammation in the early state of the tumor; or, when suppuration seems unavoidable, promoting it by fomentations, cataplasms, and stimulating applications, till it breaks of itself, or may properly be opened artificially. See ABSCESS.

BUBONOCELE (from βουλον, the groin; and κηλη, a tumor). (See RUPTURE.) It is also called *hernia inguinalis*, or RUPTURE of the GROIN.

BUCCAL GLANDS (from bucca, the cheek). All the insides of the cheeks, near the mouth, in every animal, are full of small glandulous bodies called by this name. They open by small holes or orifices, through the inner membrane of the mouth.

BUCCELATION (from buccella, a morsel);

**BUCELLA PURGATORIA**, and **BUCELLATUS**. A purging medicine made up in the form of a loaf, consisting of scammony, &c. put into ferment-ed flour, and then baked in an oven.

**BUCINATOR MUSCULUS**, *constrictor musculus*. The **TRUMPETER'S MUSCLE**; (from *βουκων*, a trumpet). It is thus named, in the human subject, because of its use in forcing the breath to sound the trumpet, by two distinct beginnings on each side, one tendinous and fleshy from the lower jaw, between the last dens molaris, and the root of the fore part of the processus coronæ; the other is fleshy from the upper jaw, between the last dens molaris and the processus pterigoides, from whose extremity also it arises tendinous, being continued between these two originations to the pterigo-pharyngeus on one side, and the mylo-pharyngeus on the other; from thence proceeding with straight fibres, and adhering to the membrane that covers the inside of the mouth, but without touching the gums of either jaw. It is inserted and lost in the angle of the lips. By its substance on each side it constitutes the cheeks, and through its middle the *ductus salivaris superior* passes. Its use is not only to move the cheeks with the lips, but also to contract the cavity of the mouth, by bringing them inwards, and so thrust the meat between the teeth, for its better comminution.

For an account of this muscle in the horse, see the different anatomical plates, particularly r, 8, 8, Pl. II. and the description of the muscles, &c. "*of the head*," under the article **ANATOMY of the HORSE**.

**BUCK**. In his first year, is called a fawn; the second, a pricker; the third, a sorrel; the fourth, a fore; the fifth, a buck of the first head; and the sixth, a great buck. This beast is common in most countries, being as corpulent as a hart, but in size resembling more a roe, except in colour: the males have horns, which they lose yearly; the females none at all. As for the colour, it is very different; however, they are mostly branded and sandy, with a black list all along the back. Their flesh is excellent for nourishment.

**BUCK-EYES**; the same as moon-eyes. See **MOON-EYES**.

**BUCKTHORN**, **RHAMNUS**, in botany, a genus of the *pentandria monogynia* class. Its characters are these: it hath male and female flowers on different plants, which have no em-  
palements according to some, or petals, according to others. The cover of the sexes is funnel-shaped, cut into four parts at the top, which spread open; the male flowers have four stamina

of the length of the tube, terminated by small summits; the female flowers have a roundish germen, supporting a short style, crowned by a quadrisid stigma; the germen afterward becomes a roundish berry, enclosing four hard seeds. There are nineteen species of the *rhamnus*.

The berries of buckthorn are larger than elder-berries, round and black, yielding a bitter purple juice, tinged with green, and holding three or four cornered seeds. The tree grows in woods and hedges, having its branches set with long stiff thorns. The syrup is the only preparation of those berries now in physical use.

#### *Syrup of Buckthorn.*

Take of the juice of ripe buckthorn berries,  
one gallon;

White sugar, seven pounds;

Pimento in powder, an ounce and a  
half;

Ginger, an ounce:

Set the juice by for three days, that the feculencies may subside, and strain. Macerate the spices in a pint of the strained juice for four hours, and strain. Boil the rest of the juice to three pints, adding, towards the end, that part in which the spices were macerated. Lastly, put in the sugar, and boil the whole to the consistence of a syrup.

The principal use of this is to mix up more active ingredients into purging balls, for horses, &c.

**BUFF**, a name commonly given to that leather-like coat which forms on the surface of blood drawn from an animal under particular circumstances of disease. This buffy gelatinous substance, in proportion to its thickness and the concavity of its surface, pretty accurately denotes the degree of general inflammation under which the animal labours, and its appearance indicates the necessity of further bleeding, and antiphlogistic treatment. In fact, it consists merely of the *coagulable lymph* of the blood from which the red particles have prematurely subsided. See the article **BLOOD**.

**BUGLOS**, **BUGLOSSUM** (from *βεζ*, an ox; and *γλωσσα*, a tongue; so called from the shape and roughness of its leaf). Called also *buglossum angustifolium majus*, *buglossum vulgare majus*, *buglossum sativum*. **GARDEN-BUGLOSS**.

The *garden-bugloss* is a rough plant, resembling borage, and differing from it chiefly in the leaves being narrow, less prickly, not wrinkled, and of a blueish-green colour, and in the segments of the flowers being obtuse. It grows wild on waste grounds in the southern parts of



Europe, is cultivated with us in gardens, flowers from June to the end of summer, and in winter it dies to the ground, but the roots continue. It is a name of the *borrago*, and as a medicine nearly similar.

BUGULA, a dimin. of *buglossa*; and said to be so called from its resemblance. BUGLE. Called also *consolida Media*, *prunella Germanis*, *sympbitum medium*, and MIDDLE CONFOUND. The sort used in medicine is the *ajuga reptans*. Linn. It is a low plant, with two kinds of stalks, round creeping ones, and upright square ones. They bear loose spikes of blue flowers; the leaves are somewhat oval, soft, and set in pairs about the joints of the stalks. It is perennial, found wild in woods and moist meadows, and flowers in May.

BULBOCASTANUM (from *βολος*, a bulb, and *καστανον*, a chestnut). So called from its bulbous appearance. Called also *agriocastanum*, *nucula terrestris*, *balanocastaneum*, *bulbocastanum majus et minus*, EARTH-NUT, HAWK-NUT, KIPPER-NUT, and PIG-NUT.

This root is as large as a nutmeg, hard, tuberous, and whitish, sending out fibres from the bottom and sides; the lower leaves are winged, cut into several divisions of leaves, finer and smaller than those of saxifrage; the stalk is above a foot high, having one leaf about the middle, which is as fine and slender as fennel, having the like leaves at every division of the branches, on the tops of which grow thin umbels of small white flowers. It grows in sandy and gravelly places, and flowers in May.

The root only is used by man: this is eaten either raw or roasted, is sweetish to the taste, and nourishing. The plant is not unacceptable to grazing animals.

BULBONACH (German). Called also *viola lunaris*, *lunaria major*, *leucoium lunatum*, *bolbonac*, SATIN and HONESTY.

The stalk is two or three feet high, as thick as a man's little finger, hairy, and of a dark red, or an azure colour; the leaves resemble those of a nettle, but are much larger, and hairy; the branches and summit of the stalk are laden with flowers of a purplish, or carnation colour; the root is knotted, whence the name *bulbonach*; the seeds are large, red, and acrid to the taste. It grows spontaneously in Germany and Hungary, and is sown in gardens in England.

This plant is a warming, diuretic medicine, but whether useful or not in veterinary practice remains to be ascertained.

BULBOUS (from *βυ*, a particle of excess, and *λαβη*, from *λαμβάνω* to take, because it is easily taken hold of from its roundness). *Bulb-*

*ous* roots are such as consist of either several coats involving one another, or of several scales laying one over the other. The first is called a tunicated root; the second is called squamous or scaly; the third, a solid bulbous root; the fourth, double bulbous, or testiculated. See LEE'S *Introd. to Bot.*

BULIMIA, a VORACIOUS APPETITE (from *βυ*, a particle which in composition augments the sense, and *λιμος*, hunger). See the article APPETITE, where this disease is spoken of as it affects the horse.

Dr. CULLEN so names this genus of disease in the human subject. He places it in the class of locales, and order dysorexia; and distinguishes three species. 1. *Bulimia heluonum*, in which there is no other disorder of the stomach than an excessive craving of food. 2. *Bulimia syncopalis*, in which there is a frequent desire of food, and the sense of hunger is preceded by swooning. 3. *Bulimia emetica*, also *cynorexia*, in which is an appetite for much food, which is presently ejected by vomiting.

This disorder consists in an insatiable desire of food, and a quick return of the appetite after eating.

BULITHOS (from *βυς*, an ox, and *λιθος*, a stone); a stone found in the gall-bladder, kidneys, or urinary bladder, of an ox. See CALCULUS.

BULL. See Bos.

BULL-BAITING. See BAITING.

BULL-DOG: one of the most fierce and strong of the canine race, having the nose short, and the under-jaw longer than the upper. The breed is in a manner peculiar to England: but, ever since the savage custom of bull-baiting has happily been on the decline, it has suffered neglect. Such is the strength and ferocity of these animals, that four of them have been known to master a lion; and when they are turned loose on a bull, and have once properly seized him, nothing short of the loss of life, or the giving way of the part, can disengage them. While that barbarous amusement continued in vogue, various instances of savage fortitude have occurred in the feats of this breed, which would scarcely be credited in countries where the diversions are more rational and elegant. See CANIS.

BUNIAS, or BOUNIAS (from *βουνος*, a hill, because it delights in rugged places; called also *asine*; *Napus*). NAVEW. It is a plant of the turnip-kind, with oblong roots, growing slender from the top to the extremity. Linnæus supposes two sorts; viz. the wild and the sweet *navew*, to be but varieties, and calls them by the name of *BRASSICA RADICE CAULESCENTE*

**PUSIFORMI.** They are biennial. It is also the *napus sativa*, *napus dulcis*, NAVEW GENTLE,—RAPE, FRENCH NAVEW, SWEET NAVEW, and FRENCH TURNIP. It is the *BRASSICA NAPUS* of Linn.

It is cultivated in gardens for the kitchen. They are warmer, and more grateful, than the common turnip, and afford a good pectoral juice.

The seeds of both sorts are warm and pungent, approaching to the virtues of mustard, but much inferior in their efficacy. Water takes up all their virtues. They yield by expression a large quantity of oil, which is sold under the name of rape oil: the wild sort is cultivated for this purpose. The cake remaining after the oil is expressed retains the acrimony of the seed.

**BUNUM** (from *βουνος*, a little hill; so called from its tuberosity). WILD PARSLEY; also called *daucus petroselinii*, vel *coriandri folio*;—*Saxifraga montana minor*. It grows in stony places; and is somewhat warming and diuretic.

**BUPLEURON** (so called from its having large ribs, like filaments, on its leaves). HARE'S EAR. Also called *auricula leporis*, *perfoliata*, and *hyssophyllum*. It grows on hilly places in France, &c. flowers in July and August, is deterfive and diuretic.

**BUPRESTIS** (from *βρεσς*, a burn, and *πρωσθω*, to burn; so called because these flies destroy cattle which eat them); the BURN-COW. They are a kind of cantharides, and are possessed of a good degree of the same virtues. It is also a name of an herb which was in much esteem among the Greeks as an esculent one.

**BURDOCK.** See BARDANA.

**BURGUNDY PITCH**; **PIX BURGUNDICA**; the resin of some turpentine-tree, less divested of its oil than the common resin is. Some say it is from the mountain-pine. It is also called WHITE PITCH. It is from the *PINUS ABIES*, *foliis solitariis*, *subtetragonis*, *distichis*, *ramis infra nudis*, *conis cylindraceis*. Hort. Kew.; Class MONÆCIA; Ord. MONADELPHIA; Linn. Gen. Plant. 1077. Burgundy pitch is chiefly imported from Saxony, of a solid consistence, yet somewhat soft, of a reddish-brown colour, and not disagreeable in smell. Plasters of this resin, by acting as topical stimulants, are frequently found of considerable service. Though formerly an ingredient in several ointments and plasters, it is now mostly confined to the latter.

**BURNS**, or **SCALDS**, occasioned by gunpowder, or any other cause, when the skin remains entire, are to be bathed well, and kept soaked with rags dipped in spirit of wine camphorated, or with linseed or fallad oil, mixed

with an equal quantity of oil of turpentine, and a plaster spread with basilicon and oil must be laid over it. If the skin is so scorched that sloughs begin to be digested out, dress the wound with powdered chalk and a common poultice. Should the horse be feverish from the pain, give him cooling clysters, and treat him as directed in simple fevers. The fire supposed to be left in the part after injuries of this kind, is nothing more than the inflammation, which is the natural effect of such causes: so that the whimsical notions and conceits concerning fire remaining in the burnt part, are extremely absurd.

If the burn be new, some use the juice of onions and verjuice mixed together; others black soap and common salt; indeed any stimulating application is proper at first, but the dressings must be milder when the discharge comes on. If the horse shivers after the accident, give some of the cordial balls and warm mashes. See BALL.

The following extraordinary cases of burns are related by GIBSON.

“Two horses were miserably burnt by the carelessness of a servant who fell asleep in a stable, and had left a candle burning, which dropped among the litter and set it on fire. One of them was burnt all along his throat, mouth, and nostrils, his breast and shoulders, his belly and sheath; and his limbs looked, in some places, as if they had been broiled. He was so extremely swelled, such quantities of hot serum were discharged, and his fever become so violent, with such pain and restlessness, that he beat himself to pieces, and died miserably, before any thing could be done.

“The other was not so severely injured; his limbs, chest, belly, and sheath, however, were scorched, and also discharged a hot scalding water in great plenty; yet his fever was not so violent, neither was he totally off his stomach, but would pick a little hay, eat mashes, and drink water-gruel. He was bled, and had several clysters to abate the fever, with nitre in his gruel. The burnt parts were dressed with the following mixture, *viz.*

Two ounces of crude sal armoniac, boiled in a quart of water a few minutes, and then mixed with a quart of spirit of wine, mixed gradually.

With this his fores were bathed several times a-day, which brought them to digest, and a great deal of the burnt skin came off; but in the end without leaving any great blemish.”

Where sal armoniac cannot be had, he says common salt may be substituted, only doubling the quantity; and brandy, or rum, instead of



the rectified spirits of wine. The good effects of this treatment arose from the stimulating remedies employed, and were, probably, in opposition to the existing theory, which, at *that period* (and even at this hour with many), required the use of every cooling and *antiphlogistic* application in burns, which Mr. KENTISH, of Newcastle, has proved to be pernicious.

BURSÆ MUCOSÆ (from *bursa*, a *purse*). Called also *bursæ tendinibus subjæctæ*; and *sacculi mucosi*. It is said that Bellini first observed them, but Douglas first described them. Their office is to emit a lubricating mucus, to facilitate the motion of the tendons in an animal body, where they play upon one another, or upon a bone.

"These bags," says PROFESSOR COLEMAN, in the VETERINARY TRANSACTIONS, "contain a large quantity of fluid similar to the oil of joints, and are placed between tendons, and also between bones and tendons. Near the large joint of the hock, immediately above the fetlock, and between the back sinews, there are large bags of the same nature. The mucous bags near the hock generally communicate with the joint. The use of these bags is to prevent friction. Instead of the hard surface of one tendon moving in contact with bone, or touching another tendon, these bags of oil being placed between solid bodies, diminish friction. It has not been generally understood, that the same bags exist in all horses when first foaled. Before the horse is domesticated they are seldom visible but by dissection, and from hence it has been inferred by men unacquainted with the subject, that these bags are first formed in consequence of disuse; but, in truth, the fluid is only increased in quantity from excess of weight or exertion, whereas the mucous bags are original parts, coequal with the formation of the animal. When the horse has been over-weighted, or done more work than he is able to support, then these bags are enlarged; in which case they are distinguished by the name of wind galls. They have probably been termed *wind galls*, from the false supposition that they contained air, and resembled the vegetable production of the same name. Technical phrases are frequently of little moment, but in the present instance they have sometimes led to erroneous and fatal practice. When mucous bags enlarge at the sides of the hock, they are commonly called thorough pins; at the anterior part of the hock, bog spavins. The former have probably had their name in consequence of the tumor extending through the hock; the latter from its being near the seat of bone spavin, and yielding very considerably to pressure.

Men not well acquainted with the structure or functions of mucous capsules, have occasionally opened them and let out the fluid. The immediate effect of this operation is the total disappearance of the tumor. But if the edges of the wound do not unite by the first intention, great inflammation speedily takes place. And if the wound heals in the most favourable manner, the internal surface of the bag will continue to secrete a fluid, and the part will become as large, if not greater in bulk, than before. The operation, therefore, of letting out the contents of mucous capsules, or in other words, the opening of wind galls, cannot succeed, and sometimes the inflammation will be so great as to endanger the life of the animal. These cavities have occasionally been opened by farriers with a sharp-pointed iron made hot: this mode is far less objectionable than others, as the coagulation of the fluids from the application of the cautery, generally closes the orifice, and restores the cavity; and as the mouth of the sac is inflamed by the hot iron and closed, the greater part of the contents of the sac, after the operation, remains entire. Setons have sometimes been recommended and passed through these bags with a view to create inflammation, and to fill up the cavities with granulations. The irritation occasioned by this practice is not only dangerous, but if the animal survives, the cavity being filled up with a fleshy substance, instead of an oily fluid, the function of the organ is lost, and probably will remain as large as before. When the mucous capsules are opened by accident, the wound is generally more violent and the consequences more dangerous; and, as it has not been generally understood, that exposing the cavity of these organs is attended with more mischief than wounds of other soft parts, proper remedies have not usually been employed."

See the article CAVITY, where the cure of penetrating wounds of this and other circumscribed cavities is shewn to consist in the use of the actual CAUTERY, the effects of which indeed are well illustrated in the following CASE, treated at the VETERINARY COLLEGE.

"The Professor was desired to see a horse, the property of Lord Jersey. On examination he found that one of the mucous capsules between the flexor tendon, or back sinew, and the long ligament that supports the two sesamoid bones, had by an accident two days before been opened. The leg was considerably enlarged and inflamed even above the knee, attended with considerable discharge. The actual cautery was applied to the surface of the wound, and fomentations

and poultices to the leg. A purgative was also given. In three days the discharge of synovia again appeared, the cautery was therefore repeated, and in less than a fortnight the discharge totally ceased. The leg, however, continued swelled and inflamed, and the horse on the 25th of May was admitted at the Veterinary College. A liquid blister was applied from the fetlock joint upwards to the bend of the knee, and a mild diuretic given every other morning for a week. When the blister had ceased to discharge, to keep the parts moist, and preserve the hair, a cold poultice of bran and water was ordered, and a second dose of physic; and by the assistance of another blister, and afterwards bandages, the horse was discharged on the 22d of June, perfectly sound.

BURSAL, a term applied to certain parts of an animal, from their resemblance to *bursa*, a purse. Hence we have the *bursal* muscle, ligament, &c. For examples of the latter, see Pl. III. 3, 4, *lower limb*, and 1, 1, *mm*, *upper limb*; and the description of the plate under ANATOMY of the HORSE.

BURSTENNESS, a vulgar term for the disease in horses and other cattle, called a *hernia*, or *rupture*. See RUPTURE.

BUTTER. The practice of mixing up balls, by the addition of butter or oil, is much condemned by some of the writers on farriery. Gibson, the most respectable of these, in his "Farrier's Dispensatory," asserts, not on his own experience only, but on that also of many others, that there is "something in *butter*, and in all unctuous things, *very disagreeable to the nature of a horse*." To these, and also to *meat-broths*, which were occasionally given to horses, he objects, on the score of their relaxing effect on the bowels. "For these reasons," he says, "we judge butter or oil improper to make up purging horse balls, except for a horse that is very hardy and strong, and where a very powerful remedy is required; or in those cases where a horse is troubled with the *hungry evil* (see APPETITE and BULIMIA), or gives other signs, whereby one may suppose the fibres of his stomach to be over-much contracted, and hardened, which is very difficult to be distinguished, otherwise than by his *continual feeding* without thriving upon it." Oil or butter alone, he adds, will purge some horses. Whether the experience of modern veterinarians will justify these objections to a substance so innoxious to the human body remains to be stated.

BUTTER of ANTIMONY, ANTIMONIUM MURIATUM. See ANTIMONIALS. This pre-

paration is highly caustic, and used for the purpose of destroying fungous flesh in wounds, or for corroding the callous edges of ulcers. On some occasions it is mixed with other ointments, and applied to sores that require to be powerfully stimulated, as in the QUITTOR, &c.

BUTTERIS; an instrument of steel, fitted to a wooden handle, with which the farrier pares the foot, or cuts the hoof of a horse. The injudicious use of this instrument has been productive of much mischief. See the articles FOOT, HOOF, SHOEING, &c.

BUTTON, of the reins of a bridle, a ring of leather with the reins passed through it, which runs all along the length of the reins. To put a horse under the button is, when a horse is stopped without a rider upon his back, the reins being laid on his neck, and the buttons lowered so fast down, that the reins bring in the horse's head, and fix it to the true posture of carriage. Not the horses only which are managed in the hand, must be put under the button, for this method must be taken, with such horses, before they are backed.

BUYING HORSES. The circumstances attending the choice, qualifications, and defects of horses, have been spoken of sufficiently under the several heads in the order of the alphabet. The accustomed ceremonial of *examining a horse, in order to purchase*, is thus judiciously described by Mr. John Lawrence.

"Having," says he "already been made acquainted with the terms, and that the nag is quiet to approach, giving him some gentle warning with your voice, you go up to him in his stall on the near side, and laying your hand on his fore-hand, you proceed from thence to examine his eyes, mouth, and countenance; still holding his head, and turning your own to the right about, you have a view of the curve of his neck, the height of his fore-hand, and the position of his shoulder and fore-arm. Returning to his fore-hand, you descend to his legs and feet, minutely examining with your fingers every part from above, below, within, and without. You will not forget the virgin integrity of the knees, so much and so justly in request. So difficult is this to repair, either by nature or art, when once violated, that I am almost tempted to add it as a fifth, to the four irrevocable things, *tempus, juventus, verbum dictum, & virginitas*.

"Being satisfied respecting his fore train, your eye and hand will glance over his back, girting-place, carcase, and loin; thence proceeding to his hinder quarter, and the setting-on of his tail. You will judge how far he agrees in



each, and every respect, with the rules of proportion; (see PROPORTION). The hinder legs and feet will demand a share of attention full as minute as the fore ones, and I must once again repeat my advice, that the inside, or hollow of the hock, be not passed without due notice (as is commonly the case), since it often happens that the injuries of hard labour are most apparent in those parts. A survey of the other side of the horse concludes the stable examination.

"Suffer no person belonging to the seller to be with you in the stall during your inspection, that the horse may not be rendered unquiet, either designedly, or at the mere presence of an habitual tormentor."

For this caution Mr. Lawrence assigns what we esteem a very forcible reason. "The examinant will by no means find so good an opportunity abroad, when the horse, according to commendable custom, shall have been *fired*, and set upon his mettle, and when his own attention must inevitably be divided. The stall is also a good situation in which to judge of the temper of a horse, his condition, sound or infirm method of standing.

"Your intended purchase is now led out in all his glory, and so much care has been probably used, during the ceremony of bridling and combing, to arouse his natural and supply him with an addition of artificial fire, that '*ware-horse*' is by no means an unnecessary caution to the by-stander. He is taken to a spot of ground raised for the purpose of shewing his fore-quarters to advantage. Here you have an opportunity of making another general survey, in a good light. It is in this situation you must make a final judgment respecting that most material object his eyes, taking care to have his head placed favourably for your inspection. The next consideration is, the condition of his legs, that he stand straight, and do not knuckle with his knees, that his joints do not tremble (the sure indication of weakness), and that his feet are even and a just distance apart. Order him next to be walked forward in hand, placing yourself immediately behind him, that you may see how he divides his legs, whether he be straight in his hams, and go sufficiently wide behind, and close before. Keep your position, and let him trot back (still in hand), and you will perceive whether he bend his knees, and go free from cutting or knocking, whether his feet be sound, and his joints free from stiffness, or injury from hard labour.

"After these preliminaries, you may permit the jockey in waiting to mount, who ought to exhibit a fair specimen of every pace, walk,

trot, canter, and gallop, you having placed yourself in the interim about midway of his intended course, forward and back again; in which advantageous situation, you may command a view of the horse, his figure and action, in all directions. In this part of the shew, the particulars to be noted chiefly, are how the horse carries his head, the degree of freedom he possesses in his shoulders, whether he goes well above his ground, and safe; whether his haunches follow well, and without over-reaching, and whether he submits to the touch of the spur without sucking in his wind, and swelling, which is a sure indication of a rebellious disposition, and that he obeys with reluctance. At the concluding scene, the nag is brought back to that elevated spot just mentioned, when you take another cursory view of him, and he returns to his stable.

"But I would advise no person, however accustomed to horses, to purchase one for his own use, without previously riding him a *trial* himself; a privilege which no dealer of credit refuses to the extent of two or three miles upon the road, in company with himself or servant. It is undoubtedly the way to know all that can be well known of an animal, in so short an acquaintance, first to see him ridden, and then to ride him yourself. You will be enabled to determine, how far his merit is to be attributed to the skill or spurs of the jockey, how far his condition and wind are to be depended upon, and whether he has been merely pampered for sale; whether his carriage be adroit, careful, and safe, over rough ways; whether he be naturally shy and skittish, or has taken aversion to particular objects; and whether he trot down hill in a firm and compact way, naturally throwing his weight upon his haunches, and bearing light on the hand, or whether he lean forward, as if desirous of using his nose as a fifth leg. This last is a consideration never to be overlooked. A hack that will not go well down hill, may fairly be pronounced good for nothing, were it only because such good qualification is generally the consequence of being well-shaped, and the backward position of the shoulder, and the inclination forward of the haunches, favouring the attitude most proper for descent. Last of all, there may be something highly disagreeable in the motions or carriage of a horse, which a person can by no other means discover, than by actually riding him; and I have frequently heard men of consummate judgment acknowledge themselves much deceived by trusting entirely to shew."

Mr. Lawrence with a laudable degree of can-

flour, resists the obloquy which has, in all periods, fallen upon dealers in horses, who have been generally supposed more prone to trick and deception than any other class of traders. This, he says, arises in part from the precarious nature of the commodity in which they deal. Their method of preparing and decking out their goods for sale, is wrong, only as far as such manoeuvres are intended to conceal unsoundness: but no reasonable objection can possibly be brought against their endeavours to set their horses off to the best advantage. The grand complaint is on the behalf of humanity, the laws of which are outraged, by the cruel and fraudulent expedients of FIGGING and FIRING.

"The bargain for a horse," says Mr. John Lawrence, "is either attended with the WARRANTY of 'sound, free from vice or blemish, and quiet to ride or draw,' or he is sold without warrant, to be taken with all faults; in which latter case, the buyer can have no right or pretence to return him, except he prove glandered, which exception I suppose arises from the illegality of selling any horse in that state."

He defines SOUNDNESS to imply, "not diseased, lame, blind, or broken-winded: nor having, at the time of sale, any impending cause thereof." By custom, three days' trial are allowed the purchaser, within which period the horse ought to be returned for unsoundness: but if the defect lie hid, and the horse can be proved

to have been unsound at the time of sale, a much longer detention does not bar the return of the horse; on the other hand, if the seller can prove the soundness, it is presumed the horse has been damaged whilst in the custody of the purchaser, who in such case must sustain the loss. In cases of this nature, as well as all others, justice must depend on the last resort, upon the judgment and integrity of the evidence.

"The impending causes of unsoundness are various; such as, rottenness, defects in the eyes, and wind; splents, and spavins. The trial of a horse's soundness ought to be committed to a person accustomed to horses. Our judgment, as to the goodness of the wind, is now universally guided by the soundness of the cough; but independent of that criterion, the preternatural heaving of the flanks in a broken-winded horse, will always be sufficiently apparent, if he be put upon a swift pace. It is necessary to try the new purchase in all paces, and even to ride him fairly a considerable number of miles, in order to discover any latent defect, or lameness of the sinews, which may have been patched up with bandage and astringents, for the express purpose of sale."

Mr. Lawrence's observations and cautions extend to many points, very material to the buyers of horses, but too copiously set forth for our present purpose. His remarks on this subject will be found in his "Treatise on Horses," Vol. II.

## C.

### C A A

**C**AA-APIA (Indian). This is a small low plant, with a root about two fingers breadth long, as thick as a swan's quill, and sometimes as large as a man's little finger. This root is knotty, and covered with filaments that are three or four fingers breadth long. Outwardly, it is of a yellowish-grey colour, but inwardly it is white. After being chewed a little it is acrid, and hath nearly the same virtues with *ipecacuanha*, whence it hath also received that name. The Brazilians cure wounds from poisoned darts with the juice of this root, which they pour

### C A C

into the wound. Piso says it hath the same efficacy against the bite of serpents.

**CACAGOGA** (from *κακω*, excrement, and *αγω*, to expel); ointment, that, by being rubbed on an animal's fundament, procures stools.

**CACHEXY**, **CACHEXIA** (from *κακος*, ill or bad, and *εξες*, a habit); a bad habit of body, called also *deformes*. In the human subject there is a defect of vital heat, and that peculiar disposition in the body which depraves its own nourishment. Dr. Cullen defines it to be "a depravity of the constitution of the whole, or of a



great part of the body, without any febrile or nervous disease as the primary one." This affection, no doubt, extends to brute animals, and lays the foundation of diseases of debility, as in man.

**CACHOS** (Indian); or *Solanum pomiferum folio rotundo tenui*. It grows only on the mountains of Peru. It is a shrub of an extraordinary greenness: the leaves are thin and round: the fruit resembles the mad-apple, of an ash-colour and a grateful taste. The Indians use it as a diuretic, and to expel concretions from the kidneys.

**CACHYMIA**, a term used by old writers to denote an imperfect metallic body, or an immature metalline ore, which is neither a saline substance nor a metal, but yet almost metal. *Cachymia* may be divided, 1st, into the sulphureous, as marcasites, bismuths, and cobalts; or, 2dly, into mercurials, arsenical or orpimental, and such-like; or, 3dly, into saline, such are all talcs.

**CACOCHYLIA** (from κακος, *bad*, and χυλη, *chyle*). Indigestion or depraved chylication.

**CACOCHYMIA** (from κακος, *ill*, and χυμος, *humour*). For this the barbarous term *Kachymia* is sometimes used. A depraved state of the humours.

**CACOETHES** (from κακος, *ill*, and ηθος, *mor*, a *custom*); which, when applied to diseases, signifies a bad quality or disposition. By this term is also understood a malignant ulcer, boil, or sore, with callous edges, and an acrimonious discharge.

**CACOPRAGIA** (from κακος, *ill*, and πραττω, *to do* or *act*). A depravation in those viscera by which nutrition is performed.

**CACOPHYXIA** (from κακος, *ill*, and σφυξις, from σφύξω, *to leap* or *beat like an artery*). A disorder of the pulse in general.

**CACOSTOMACHUS** (from κακος, *bad*, and στομαχος, *stomach*). Literally, an ill or bad stomach; but it is spoken of food that is bad for the stomach.

**CACOTHYMIA** (from κακος, *ill*, and θυμος, *the mind*). Any vicious disposition of the mind.

**CACOTROPHIA** (from κακος, *ill*, and τροφη, *nutriment*). Any sort of vicious nutrition in general.

**CADENCE**, is an equal measure or proportion, observed by a horse in all his motions, when he is thoroughly maneged, and works justly at gallop, *terra à terra*, and the airs: so that his times or motions have an equal regard to one another: that one does not embrace, or take in more ground than another, and that the horse observes the ground regularly.

Horsemen say, "This horse works always upon the same cadence; he follows the cadence; he does not change his cadence; he remains equally between the two heels.—He is fine and gentle in all his aids; and when put to the manege, he never interrupts his cadence.—This horse has so fine a mouth, and works with so much liberty in his shoulders and haunches, that he keeps his cadence with great facility: nay, he takes a very good cadence upon his airs, without stepping false, without jumbling, and works equally in both hands." See COUNTER-TIME and TIME.

**CADMIA** (from the Hebrew term *kadam*); also *Chlimia*, *Climia*, *Catimia*. This name has been applied to several different things. **DIOSCORIDES** meant by it the recement, which arises from brass whilst melting. **GALEN** applied it to the recement of brass; and a stone found in some mines, called *Cadmia LAPIDOSA*, supposed to be the *æruginosus lapis*. The calamine stone is now called *cadmia*, and the *Germans* have given this name to cobalt.

**CADUCUS** (from *cado*, *to fall*), in botany, means being of the shortest duration; as *caducum folium*, a leaf falling at the first opening of the flower.

**CÆCILIA** (from *cæcus*, *blind*), the **BLIND-WORM** or **SLOW WORM**, also called *cæciliaty phlops*, and *cæciliaty phlinus*, *Græcis*. It is a species of serpent, whose bite has been erroneously thought of much the same effect as that of the viper.

**CÆCUM**, the **BLIND GUT**; so called from its being open at one end only; called also *monomachon*, and *monocolon*. What we now call the *appendicula cæci*, in animals, **Rufus Ephesus** calls the *cæcum*. But modern anatomists divide the large intestines, which form one continued canal, into three portions. This canal begins by a kind of **SACULUS**, or bag, which is the first of the three portions, and is called *cæcum*. It lies on the inside of the os ilium upon the iliacus internus, and is only a round short broad bag, whose bottom is turned downwards, and its mouth upwards. This intestine, which is about three fingers breadth long, is hid by the last convolution of the ilium. It hath the same bands as the colon, which bands take their origin from the *appendicula vermiformis*. Its diameter is more than double that of the small intestines. Its arteries are from the mesenterica superior. The veins are from the greater mesenteric, and one of the branches is the *vena cæcalis*. The nerves are from the posterior, and inferior, mesenteric. See **ABDOMEN**.

**CÆSAREAN SECTION**, an operation in the human female, also called *hysterotomia*, and

*hysterotomatoxia*, whereby the foetus is extracted from the uterus through the teguments of the belly. It was called the *Cæsarean* operation, from Julius Cæsar, who was brought into the world this way; though some say it was from one *Cæso*, who was the first thus taken from his mother's womb, and from whom the operation is named. In veterinary obstetrics, cases no doubt may happen wherein this operation may become necessary. These are, 1. When the mother dies, and the foetus is perceived to be alive. 2. When the foetus is so præternaturally situated as that its birth is impossible either by the mother's efforts, or by manual help.

Instances have occurred in the human subject, in which both the mother and child have lived after this operation; and if so, the probability of its succeeding with the brute creation must be much greater.

**CALABA, INDIAN MASTICH TREE.** It has rosaceous flowers, which are followed by a fleshy fruit that includes a nut. This tree is a native of the warm parts of America. From the trunk and branches a gum, like the gum-mastich, issues.

**CALADE, or BASSE;** the descent, or sloping declivity of a manege ground; being a small eminence, upon which they ride down a horse several times, putting him to a short gallop, with his fore-hams in the air, to make him learn to ply and bend his haunches, and form his stop upon the aids of the calves of the legs, the stay of the bridle, and the cavesson, seasonably given: for without those aids he would throw himself too much upon his shoulders, and not bend his haunches. Horsemen say, "Work your horse in a *calade*, after the *Italian* way."—"Ride him straight, and then you make good use of the *calade*."—"These *calades* will discourage your horse, and perhaps ruin his hams; for you have pitched upon too deep a declivity: and besides, you do not make the aids of the bridle accord with those of the calves of your legs." These expressions sufficiently indicate the sense in which the word is understood.

**CALAMARIÆ** (from *calamus*, a reed). An order of plants of the reed kind.

**CALAMINARIS LAPIS** (from *calamus*, a reed); so called from its reed-like appearance. **CALAMINE STONE**, **CADMIA**, or **CATHMIA**; also called *cadmia lapidosa ærofa*; *cadmia fossilis*, **CALAMITE**, **CALAMY**, and **CALAMINAR STONE**. This is a metallic mineral, of a grey, brown, yellow, or pale red colour, and sometimes of all these colours variously mixed; it is heavy and hard, but not so as to strike fire with steel. It is of a

middle nature betwixt stone and earth, found in copper mines, and those of lead and iron; it is found in England, Germany, and other countries, either in distinct mines, or intermixed with the ores of lead or other metals. It is the ore of a metal known by the name of **ZINC**, and contains a small portion of iron. It is generally calcined before it is brought into the shops, in order to separate some sulphureous and arsenical particles, of which it is supposed to be possessed, and also to render it more easily reducible into powder.

*Calamine* is ranked by Mr. Edwards, in his Elements of Fossilogy, as a cryptometalline stone, and its varieties as so many species of the zinc-stone genus: some are varieties of the zinc flosses; they are transparent or glossy.

Though the *calamine* stone is an ore of zinc, it is not the only one; for zinc is found in the ore of lead, and of other metals. The principal use of this mineral is for changing copper into brass, which it does by its metallic part mixing with the copper while it is in a state of fusion, rendering it brittle and sonorous.

For medicinal uses, the *calamine*, after being calcined, should be levigated to an impalpable powder; it is then useful in collyria, as an astringent and corroborant, and against effusions upon the eyes, and in cerates for ulcerations, &c. If it is exquisitely fine, it acts as an absorbent or desiccative; but if not, it is escharotic.

The London College directs the following cerate, in which this mineral is the principal ingredient:

#### *Calamine Cerate.*

Take of olive oil, a pint;

Yellow wax,

Calamine prepared, of each half a pound:

Melt the wax with the oil, and, as soon as the mixture begins to thicken, sprinkle in the *calamine*, and stir all well till the cerate is quite cold. This is calculated to promote the cicatrification of ulcers in the human subject, but it has scarcely activity enough for veterinary purposes. We may therefore consider it merely as a mild dressing for sores that require no stimulus.

**CALAMUS** (from the Arabic term *kalam*, or *kelemus*). The stalk of any plant. See **CAUDEX**.

**CALAMUS AROMATICUS**, **SWEET-SCENTED FLAG**; also called *clava rugosa*, *diringa*, *jacerantatinga*, *acorus verus*, *typha aromatica*. It is the **ACORUS CALAMUS VERUS**. *ACORUS scapi*



*macrone longissimo foliaceo*, KEW. HORT. Clafs HEXANDRIA. Ord. MONOGYNIA. Linn. Gen. Plant. 434.

The name of *calamus aromaticus* is given to the ACORUS, but they are very different things; the first is a stalk of an eastern reed, which is slender, hollow, white, and of a fragrant smell; it is also called *calamus odoratus*, and *arundo Syriaca*.

The dried roots are brought from the Levant, but those of our own growth are preferable. This root is aromatic, stomachic, and carminative. As an *aromatic*, though not heating like the spices, it promotes the fluid secretions, is of use in gangrenes both internally and externally, agreeably stimulates, and produces other good effects. It has been deemed useful as a warm stomachic, and renders other medicines more grateful and carminative. In conjunction with the bark, it seems to add to its efficacy, particularly where the stomach is in a torpid state. The aroma is fixed, and will keep many years. When fresh gathered, the scent is not agreeable, but somewhat like that of leeks; by drying, this kind of flavour goes off. That which is found, tough, and whitish within, when broke, is the best. Water takes off the bitter part of this root, and spirit the *aromatic* part. In distillation with water, it sends up a very small portion of essential oil, leaving a nauseous bitter in the decoction.

**CALCANEUM** (from *calx*, the heel). The HEEL-BONE. In the horse, its form and situation are shewn in Plate V. "*Bones of the lower extremities*," 7, 7, 8, 9. See the description in the article BONES.

**CALCAR.** See **CALCANEUM**.

**CALCINATION**, the reduction of solid bodies, by the means of fire, from a coherent to a state of OXYD, accompanied with a change of their quality; in which last respect this process differs from comminution.

To this head belong the burning of vegetable and animal matters, otherwise called *ustion*, *incineration*, or *concremation*; and the change of metals into a powder, which, in the fire, either does not melt, or vitrifies, that is, runs into glass.

The metals which melt before ignition are calcined by keeping them in fusion for some time. The free admission of air is essentially necessary to the success of this operation; and hence, when the surface of the metal appears covered with calx, this must be taken off or raked to one side, otherwise the remainder excluded from the air will not undergo the change in-

tended. If any coal, or other inflammable matter which does not contain a mineral acid, be suffered to fall into the vessel, the effect expected from this operation will not be produced, and part of what is already calcined will be revived or reduced; that is, it will return into its metallic form again.

Those metals which require a strong fire for fusion, calcine with a much less heat than is sufficient to make them flow. Hence the burning or scorification of such iron or copper vessels as are long exposed to a considerable fire without defence from the air. Gold and silver are not calcinable by any degree of fire.

In calcination, the metals visibly emit fumes: nevertheless the weight of the calx proves greater than that of the metal employed. The antimonial regulus gains about one eleventh part of its weight; zinc sometimes one tenth; tin above one sixth; and lead in its conversion into minium often one fourth.

The oxydation of metallic bodies, gold, silver, and mercury excepted, is greatly promoted by nitre. This salt, exposed to the fire in conjunction with any inflammable substances, extricates their inflammable matter, and bursts with it into flame, accompanied with a hissing noise. This process is usually termed *deflagration* or *detonation*.

All the metallic calces and scorix are revived into their metallic state by fusion with any vegetable or animal inflammable matter. They are all more difficult of fusion than the respective metals themselves; and scarcely any of them, those of lead and bismuth excepted, can be made to melt at all, without some addition, in the strongest fire that can be produced in the common furnaces. The additions called *fluxes*, employed for promoting the fusion, consist chiefly of fixed alkaline salts. A mixture of alkaline salt with inflammable matter, as powdered charcoal, is called a *reducing flux*, as contributing at the same time to bring the calx into fusion, and to revive it into metal. Such a mixture is commonly prepared from one part of nitre, and two parts of tartar, by grinding them well together, setting the powders on fire with a bit of coal or a red-hot iron, then covering the vessel, and suffering them to deflagrate or burn till they are changed into a black alkaline coaly mass. This is the common reducing flux of the chemists, and is called from its colour the *black flux*. Metallic calces of scorix, mixed with twice their weight of this compound, and exposed to a proper fire in a close covered crucible, melt, and resume their metallic form; but though they re-

ceived an increase of weight in the oxydation, the revived metal is always found to weigh considerably less than the quantity from which the calx was made.

All these processes, and the principles on which they depend, belong to CHEMISTRY. See the articles themselves as they occur in the order of the alphabet.

CALCIS AQUA, *Lime-Water*. See CALX.

CALCIS OS. See CALCANEUM.

CALCULUS (from *calx*, a *lime-stone*); the disease called the *STONE*. The Greeks called this disorder *lithiasis* and *adamitum*; the Latins name it *calculus*; and the English understand by it *gravel*, *sand*, or *small stones*, that pass, from time to time, from the kidneys through the ureter, and are expelled from the bladder with the urine. By the *stone*, is understood a calculous concretion in the kidneys, or in the urinary bladder, which is too large to pass. Some call it NEPHRITIS in the human subject; though now, in modern practice, this is confined to an inflammation of the kidneys.

That the horse is subject to *stone* in the bladder is shewn in the article BLADDER. Cattle in general are also liable to solid concretions, not properly to be denominated *calculi* though having their outward resemblance, in their stomachs or intestines.

Dr. WITHERS, of Newbury, communicated to the Medical Society of London, the following curious facts respecting intestinal concretions in horses.

"Many years ago," says he, "I gave the late Dr. W. Hunter a large intestinal stone of a horse which proved fatal to the animal; and some years afterwards, I saw an engraving of a section thereof in the doctor's possession. Subsequent to this period a like instance happened in this neighbourhood; and what then seemed to me singular was, that the horses belonged to *millers*. This circumstance excited my attention, and from enquiry I found that their horses were more liable to this disease; which observation I have long noticed to my medical friends. Their food, I am informed, is chiefly composed of brans and split beans, the mucilaginous part whereof is a favourable medium for associating the strong particles abraded in trituration. Another circumstance may also contribute towards the generating these concretions; their horses are generally watered at a river, and for the most part below the mill. This water being in constant agitation by the rapidity of the stream necessary for turning the wheel, must necessarily raise and keep afloat small fabulous particles, many of which must be taken into the stomach. I am the more confirmed in this opinion by

conversation I have had with a friend of mine who constantly keeps upwards of a hundred draught horses, none of which he has ever lost from this disease. His manner of feeding is to give them brans, oats, and beans, either *whole*, or split by means of a *steel-mill*. Some years since, when attending the late Mr. Andrews, miller, of Shaw, near this place, he informed me of his having a very valuable horse ill with the colic, and which he supposed would die: I told him, that if he would have the intestines examined, he would find a large stone in them, which was the cause of the horse's illness; he laughed at the prediction, and consequently neglected the enquiry. On visiting a few days afterwards, he produced a large round stone, broken, and informed me that the dogs in eating the intestines had made the discovery. Since the death of Mr. Andrews, his son has lost a valuable horse from the same cause. He tells me that his father had reason to believe, that in his time, he lost two more valuable horses from the same disorder. To these instances of the loss of millers' horses I could add many others proceeding from the same cause. Mr. Andrews has, by my advice, for these several years past, changed the diet of his horses. He gives them brans, and beans not *split*, with a certain proportion of chaff; he supposes the beans to contain the greatest proportion of stony particles, as they are ground by stones softer than those which are used for grinding wheat. Since this time he has had no reason to think that any of his horses have stony concretions formed in their bowels; nor such appearances in their faeces, as he recollects to have formerly observed."

Dr. Withers also observes, that masses, or accumulations of a less dense texture, are sometimes found in the intestines of horses. He says,

"My friend, above alluded to, has informed me, that in the course of the last 30 or 40 years he and his father have lost three or four horses in consequence of obstructions in the bowels, arising from large lumps of a spongy substance, which had rather the appearance of *indurated faeces* than of *stone*, and which, on being exposed for some time to the air, mouldered away. Some of the stones, however, alluded to in the foregoing account, were of so hard a nature as to be capable of receiving a fine polish."

CALCULUS BILIARIS (from *bilis*, *bile*); the GALL-STONE. All animals that have GALL-BLADDERS (in which number the horse is not included) are liable to biliary calculi. These however are not of the nature of urinary calculi, being only the bile concreted into hard lumps. Similar stones are often met with also in the *ductus choledochus*, both in the human and brute



subjects, without being suspected. *Gall-stones* will often lie quiet in the gall-bladder; and until dissection after death; but when they are prevented from passing through the gall-ducts, they generally obstruct the passage of the gall into the intestines, and produce also many troublesome symptoms, particularly the JAUNDICE, or YELLOWS, as it is vulgarly called. See JAUNDICE.

CALENDULA, so called, *quod singulis calendis*, i. e. *mensibus, florescat*, because it flowers every month. GARDEN-MARIGOLD, called also *caltha calendula sativa, chrysanthemum, sponso solis, solsequia*, SINGLE MARIGOLD. Class SYNGENESIA, Ord. POLYGAMIA NECESSARIA; Linn. Gen. Plant. 990.

Of the many sorts of *marigold*, this is the only one that is generally received in medicine. It is so common in our gardens, that a particular description is needless. It is annual, propagates itself by seeds, and flowers from May to the end of Autumn. The COMMON SINGLE MARSH-MARIGOLD, also called *populago, caltha palustris, pseudo belleborus, ranunculoides pratensis*, &c., grows in marshes, and is very acrid. It is so caustic that cattle avoid it, if grass is ever so scarce; for it excites inflammation in the stomach if they chance to swallow it.

CALF; the young of the cow kind, an animal too well known to require a particular description. The husbandman should rear as many calves as he can conveniently keep, in order to maintain his stock; and these chiefly should be such as may fall between *Candlemas* and *May*, for in that season the cows' milk may be best spared. By that time too there will be sufficient grass to wean the calves, and by the winter following they will have strength sufficient to preserve themselves from being hurt among other cattle, if they have now and then some little help. By *June* too the dams will be readier to take the bull, and to bring other calves in proper time. If a cow goes till after *May* before she calves, the calf will be too weak the winter following; the dam will not be so ready to take the bull again, but often grows barren. Besides, to rear a calf after *Michaelmas*, and to keep the dam at her meat, as they do in some countries, would be expensive in the winter-time; and a cow abroad will give more milk with a little grass than with fodder, lying in the close-house, or fed with hay or straw, remaining in the stall; for the dry and hard meat diminishes the milk. Those that have small pastures or none at all, had better sell their calves than rear them: they may thus turn the milk to more profit, and the cow will rather go to the bull again. If the husbandman goes with an ox-plough, it will be convenient for him to raise two or three cow-

calves, to keep up his stock, and it will be the more profitable. It is far better to wean calves at grass than at hard meat, if they were at grass before: those that can have several pastures for their kine and calves, are likely to do well, and rear with less cost than others. The weaning of calves with hay and water will distend their bellies, because they do not do so well with that as with grass, and they will be more apt to rot when they come to grass. In winter they should be housed, rather than remain abroad, as young animals are not able to endure severe weather.

The state of our knowledge of the diseases to which calves are obnoxious is miserably defective. Mr. TOPHAM, indeed, in a chapter of his "*Treatise on Cattle*," divided with great formality into *ten sections*, considers and prescribes for various maladies attributed to these animals. These may be generally classed under two heads, viz. affections of the intestines and of the brain.

He first recommends the use of medicine to expel the meconium soon after the birth of the calf, which, he says, very often cannot be effected without; and when neglected, sometimes occasions the animal griping pains, convulsions, and death. The defect, he says, will be remedied by the following stimulating purge, &c.

Take Rhubarb, three drachms;

Cream of tartar, one drachm;

Lenitive electuary, a drachm and a half:

Mix and give in a pint of warm beer. Or,

Take cream of tartar, one ounce;

Powdered rhubarb, one drachm:

Mix and give in the same way. Either of these are sufficient for a large strong calf; to be given occasionally, so as to evacuate all slimy humours from the intestines, which will promote their future nourishment and growth.

Mr. Topham says, a *diarrhœa* in young calves is a good symptom, and unless it become violent or continue too long, it should not be suppressed; because a laxative state of the body is natural, on account of the nature of their aliments and their tender state. Afterwards, however, he commends the milk possessing such qualities as to make "*hard dung*," as that is reckoned the most nourishing.

In treating on the DYSENTERY in calves, we are told, that "bleeding, according to the demand of the symptoms and strength of the patient, is absolutely requisite, and ought to be repeated. But if we may reason from analogy, and are to be guided by what proves the most successful treatment of this disease in other animals, we should doubt the propriety of such a remedy. The following medicine is perhaps less exceptionable:

Take powdered rhubarb, three drachms ;  
 Cream of tartar, an ounce and a half ;  
 Roman philonium, three drachms :

Mix for one dose, to be given in a pint of barley-water every nine or ten hours, or occasionally.

The philonium quiets the bowels, while the rhubarb and tartar carry off the slimy matter which irritates the intestines. Clysters also are of great use in dysentery, and therefore should not be omitted.

Take of starch, half an ounce ;  
 Boiling water, half a pint ;  
 Venice treacle, half an ounce.

First dissolve the starch in the water, and afterwards add the Venice treacle.

This clyster must be injected warm, and may be repeated according to the urgency of the symptoms. The Venice treacle, in this composition, by its opiate quality, renders the bowels insensible of the action of those acrid particles that corrode their texture ; while the starch is bland and nutritive.

Mr. Topham also advises ipecacuanha as a *specific* in dysenteric disorders. Eight grains of the powder may be given, with six drachms of diascordium, in a pint of the decoction of comfrey root, and repeated every eight or ten hours.

In all dysenteries, diarrhoea, or too lax a state of the intestines, Mr. Topham says the following remedies may be used with advantage. When the scouring is very immoderate,

Take salt of tartar, one drachm ;  
 Venice treacle, two drachms ;  
 Vinegar, five or six spoonsful.

“ The vinegar and salt of tartar when put together will ferment, and it must be given in that fermenting state, and repeated according to the urgency of the symptoms.

“ No prescription can be better adapted to the cure of preternatural evacuations of the viscera than the above ; it will effectually answer the purpose whenever indicated.

“ If the external parts be cold, and the disease appear just in the last stage,

Take diascordium, six drachms ;  
 Venice treacle, half an ounce ;  
 Powdered rhubarb, a drachm and a half ;  
 Virginian snake root, two drachms.

“ This is for one dose, to be given in barley-water or a decoction of comfrey, and repeated every eight hours, during the violence of the symptoms.

“ Half an ounce of powdered chalk may be given in each dose, to blunt and sheath the acid particles which twinge and vellicate the intestines.”

Our confidence in Mr. Topham's judgment is somewhat shaken, however, by his afterwards directing isinglass dissolved in decoction of comfrey, with chalk and *sugar of lead* ; the last of which is well known to possess deleterious qualities.

The following as an astringent may be less exceptionable :

Take tincture of opium, three drachms ;  
 Dragon's blood, half an ounce ;  
 Decoction of comfrey root, a pint :

Mix these for one dose, to be repeated occasionally.

When a looseness has continued long, there will be a continual and ineffectual inclination to dung, which is properly called a *tenesmus*.

In a tenesmus, the pain is limited to the rectum, or parts connected with it, and the evacuation is little else but a mucus tinged with blood, if the disease has been dysentery. This frequently happens towards the end of some inveterate looseness, and is caused by the acrid and slimy humour adhering to the coats of the rectum, and stimulating the sphincter of it to those very uneasy, troublesome, and vain motions.

For the relief of this symptom, Mr. Topham says the injecting some detergent clyster will be the most effectual, such as the following :

Take cream of tartar, an ounce and a half ;  
 Venice treacle, half an ounce ;  
 Oil of castor, one ounce ;  
 Balsam of capivi (previously mixed with the yolks of two eggs), half an ounce :

With a gill of warm water make these into a clyster, and when lukewarm, let it be injected at the rectum, and retained there by the assistance of a clout applied to the anus two or three hours.

“ A clyster of this kind,” he says, “ may be injected occasionally ; the clyster-pipe should be about six or seven inches long, to prevent the calf from straining ; and the animal should be borne up by the hinder legs till the clyster is totally injected, which may be easily done if the calf is not too large.”

The following medicine may be given by the mouth :

Take isinglass, six drachms ;  
 Dissolve it in one pint of hot barley-water, and add,

Powder of rhubarb, one drachm.



This is for one dose, to be repeated occasionally.

"A tenesmus is sometimes attended with a prolapsion of the anus, the rectum falling down so low as to require external assistance to replace it. When this is the case, if it be not soon reduced, it is dangerous, the gut being apt to inflame and mortify, if long exposed to the air. It is subject also to relapse after reduction, when the calf strains, and it is difficult to keep up, in case of a diarrhœa. If the intestine be swelled, foment it with warm and weak solution of alum. If it be discoloured, and a mortification is apprehended, foment the tumefied part, and then let it be reduced with the fingers, oiled for that purpose; and apply a compress to the part dipped in alum water or red wine, with a proper bandage, and lay the calf with the hinder parts higher than the shoulders for some time. If the tenesmus remain obstinate, or if there be a great imbecility in the part, a proper truss may be contrived to prevent its falling down again. It very often happens that, from a particular weakness of the part, the rectum descends lower than it should do, but that may be remedied by a mild clyster made of Theriac. Androm. about six drachms, dissolved in a gill of luke-warm water; repeated as occasion shall require."

For *costiveness* in calves Mr. Topham directs the following remedies: For a large strong calf,

Take Powdered jalap, half an ounce;  
Cream of tartar, a drachm and a half;  
Powdered ginger, an ounce:

Mix these in a pint of barley-water for one dose; to be repeated as occasion shall require.

Take of Glauber's salt, four ounces;  
Lenitive electuary, one ounce;  
Powdered ginger, half an ounce:

Give these in a pint of warm water or beer, for one dose. If the calf be not very large, two or three ounces of salts will be sufficient. Or,

Take Cream of tartar, three ounces and a half;

Infusion of Senna, six ounces:

Give as above for one dose.

"When a calf has *swelled legs*, attended with a lameness, or any other symptom of that kind, going under the denomination of the *FELON*," Mr. Topham says, "the following medicines may be given:

Take Theriaca Andromachi, seven drachms;  
Spirits of sal armoniac, two drachms;  
Powdered gentian, one ounce:

"Make the whole into an electuary with a

sufficient quantity of treacle, for one dose; to be given dissolved in beer, barley-water, or thin gruel; the interval fourteen or sixteen hours. Great care should be taken to keep the animal warm.

"If there be the least appearance of an inflammation, bleeding is requisite according to the inflammatory disposition of the blood. Moreover a *dry friction* in every lameness and stiffness of the body, also in every other sluggish disposition of the fluids, is absolutely necessary."

His instructions, in cases of *affection of the head*, are these:

"The *symptoms*," he says, "are a dull countenance, the external parts cold, a preternatural discharge of slime and matter from the nostrils, &c."

For the *cure*, bleeding according to the strength of the animal is advised; and the following stimulating medicine:

Take spirits of sal armoniac, two drachms;  
Camphire, two scruples;  
Honey, half an ounce:

For one dose, to be given in a pint of thin gruel, or barley-water, and repeated every six hours, till the symptoms abate. A meat-spoonful of mustard may be added to each dose.

When this disease becomes more formidable, and these dull symptoms tend to an affection of the brain, bleeding in a free manner is required.

The diagnostic signs of the disorder called a phrenzy, are a wildness of the eyes, and a strong pulse, because this disease proceeds from a superabundant quantity of blood forced upon the meninges of the brain. Bleeding unloads the vessels in the head, and cooling purgative medicines are also proper.

Take Cream of tartar, two ounces;  
Nitre in powder, one drachm;  
Jalap in powder, one drachm:

To be given in a pint of water-gruel, made warm, for one dose, and repeated every six hours during the violence of the symptoms. A mercurial purge, in the first instance, would probably answer the end more effectually.

Calves are also subject to a *VERTIGO*, in sheep called the *GID*.

In this disease, after due evacuation by bleeding and purging, we are instructed to give the following medicine:

Take Valerian in powder, four ounces;  
Round birthwort in powder, three ounces;  
Nitre in powder, one ounce:

With a sufficient quantity of treacle make an

J. L.





*Cow-Pox pustules as they appear on the teats.*





electuary, for seven doses, for a large calf: each dose to be given in a pint or upwards of barley-water, or thin gruel, and repeated every six hours during the violence of the symptoms. Or,

Take Spirits of hartshorn, one ounce;  
Theriaca Andromachi, half an ounce;  
Gentian in powder, five ounces:

Make the gentian and theriaca into an electuary with treacle; then let the spirit of hartshorn be added proportionally, for seven doses. It may be given in water-gruel, and repeated every five hours.

The last disease spoken of by Mr. Topham is "a tumor upon the umbilicus or navel;" for the cure of which without the knife, we are directed thus:

Take Spirits of sal armoniac, two ounces;  
Oil of terebinth, one ounce and a half;  
Common salad oil, four ounces:

Shake all these together in a bottle till they are intimately mixed; and take as much of it as will well moisten the protuberance, and rub it well in; repeating it twice a-day. A cataplasm, made of oatmeal, must be applied to the part, and supported by a bandage round the body. Let a quantity of the volatile liniment also be mixed with the cataplasm and repeated occasionally. This will either disperse or suppurate the tumor, either of which will effect a cure.

We doubt whether, in all instances, Mr. Topham's injunctions have been dictated by sound veterinary principles, but they have more of the appearance of *rationality* than can be traced in other works on a subject which is necessarily obscure, from having, as yet, undergone so little investigation.

An account of the *remarkable structure and appearance of the external organs of generation in a calf*, by Mr. SANDFORD, Surgeon, at Worcester, appears in vol. II. of the *Medical and Physical Journal*.

This calf, which was killed at ten weeks old, was supposed to have, in some respects, the genital organs of both sexes united; and not being a twin calf, it was on this account esteemed the more remarkable. On the first view, the animal appeared to have testicles, which seemed divided in a very singular manner, each testis having a complete and separate scrotum, at a distance of nearly six inches from the other. The penis, instead of proceeding in the usual direction along the belly of the calf, terminated in its sheath immediately between these apparent testicles; and in one point of view resembled the vagina of a cow, with its *bearing* rather more dependant than usual. This remarkable appear-

ance seemed in some degree confirmed by the animal voiding its urine backwards, in the same manner as the cow. Externally, and on each side of the abdomen, in their usual situation, were two teats or nipples, at the distance of about three inches from the pouches or scrota, as is shewn in the drawing, pl. VII.

In order to be fully satisfied that the substance resembling the penis of the bull, was not an elongated *clitoris* (a mistake that has sometimes happened), Mr. Sandford first examined with a probe, and finding it pervious, introduced a director, and then laid it open to the ramus of the ischium, and by this means traced the urethra along its course towards the bladder, as far as the instrument could be passed. After this inspection, he dissected out the penis its whole length.

On examining the *internal organs of generation*, nothing by any means præternatural or confused could be traced. The testes were within the abdomen, and were placed on each side, corresponding to the pouches, into which they most probably would have descended, had the calf been reared. The distance from the verge of the anus to the extremity of the sheath or vagina, measured nearly *twelve inches*.

The appearances most worthy of remark in the external genitals of this calf, are the situation and distinctness of the two scrota, together with the singularity in appearance, and deficiency in length, of the penis, from which circumstances (had the calf grown up) it would assuredly have been prevented from copulating, and at the same time would have had the appearance of what is commonly called, an HERMAPHRODITE.

This animal could by no means be considered a *Free Martin*, since, in the latter, the external parts of generation, resemble most those of the common cow; though the internal organs have been found to differ very materially. For an account of these anatomical peculiarities, investigated by the late Mr. HUNTER, see the article FREE MARTIN.

CALF, among hunters, also denotes a male hart or hind of the first year.

CALF-STAGE, or CALF-PENN, a kind of cage or inclosure, for the confining and nurture of calves. A cage which holds seven, or occasionally eight calves, is of the following description.—The house or room-stead, in which it is placed, measures twelve feet by eight. Four feet of its width are occupied by the stage; and one foot by a trough placed on its front; leaving three feet as a gangway; into the middle of which the door opens. The floor of the stage is formed of laths, about two inches square,



lying lengthway of the stage, and an inch asunder. The front fence is of staves, an inch and a half diameter, nine inches from middle to middle, and three feet high; entered at the bottom into the front bearer of the floor (from which cross joists pass into the back wall), and steadied at the top by a rail; which, as well as the bottom piece, is entered at each end into the end wall. The holes in the upper rail are wide enough to permit the staves to be lifted up and taken out to give admission to the calves; one of which is fastened to every second staff by means of two rings of iron joined by a swivel; one ring playing upon the staff, the other receiving a broad leathern collar, buckled round the neck of the calf. The trough is for barley-meal, chalk, &c. and to rest the pails on. Two calves drink out of one pail; putting their heads through between the staves. The height of the floor of the stage from the floor of the room is about one foot. It is thought to be wrong to place it higher, lest, by the wind drawing under it, the calves should be too cold in severe weather: this, however, might be easily prevented by litter, or long straw dung thrust beneath it.

It is observable, that these stages are fit only for calves, which are fed with the pail; not for calves which suck the cow.

Fattening calves, in some countries, are kept on the stages until they are sold: rearing calves, until they are three weeks or a month old; or until they begin to pick a little hay; when they are removed to a rack, and allowed greater freedom.

**CALIGO** (from *caligo*, to be dark); a growing darkness of the eye, or dimness of the sight, from a manifest cause; as in cases of the cataract, &c.

**CALIX.** See **CALYX**.

**CALLOSITY**, **CALLOSITAS** (from *callus*). See **CALLUS**.

**CALLUS** (from *calx*, the heel, or *calco*, to tread; because it used to be applied to the hard and thick skin at the bottom of the human heel, made so from being much trodden upon), is a cutaneous, fleshy, or osseous hardness of any part, either natural or preternatural. But more generally it means the *callus* generated about the circumference of a fractured bone. In the human subject, it sometimes means a corn on the toes, or that hardness in the hands produced by labour; also the hard edges of ulcers.

*Callus* has a particular signification also, in which it means the *corpus callesum* of the brain. The hard cicatrix which remains after a wound, especially of the lacerated kind, has been called by that name. The *callus* of bone may become

luxuriant when the vessels which constitute the substance of the growing bone are distended, either by a redundancy, or too strong impetus of the fluids. Dr. Hunter imagined a *callus* of the bone was not formed by the inspissation of any fluid, but from a regeneration, or, as it were, granulation from the fibres of the bone; this, however, is not agreeable to Mr. John Hunter's theory of the formation of the bone, for which see the article **BONES**.

**CALMUS** (from the Arabic term *kalam*). The stalk of any plant. See **CAUDEX**.

**CALOMEL**, **CALOMELAS** (from *καλός*, good, and *μελας*, black); a well-known preparation of quicksilver, of great importance in veterinary medicine. By the London and Edinburgh Colleges it is directed to be made in the following way:

**CALOMEL or MERCURIUS DULCIS.**

*Lond.*

Take of muriated quicksilver, one pound;  
Purified quicksilver, nine ounces:

Rub them together till the globules disappear, and sublime; then rub all together again, and sublime; and in the same manner repeat the sublimation four times; afterwards, rub the matter to a fine powder, and wash it with boiling distilled water.

*Edinb.*

Take of muriated quicksilver, reduced to powder in a glass mortar, four ounces;  
Pure quicksilver, three ounces and a half:

Mix them well together, by long trituration, in a glass or marble mortar, until the quicksilver ceases to appear. Put the powder into an oblong phial, of such a size, that only one third of it may be filled; and sublime it from a sand heat. When the sublimation is finished, let the phial be broken, and the red powder about the bottom, and the white about the neck, both thrown away, but the remaining mass sublimed three or four times, and reduced into a very fine powder.

The trituration of corrosive sublimate with quicksilver is a very noxious operation. For it is almost impossible, by any care, to prevent the lighter particles of the former from arising, so as to affect the operator's eyes and mouth. It is nevertheless of the utmost consequence, that the ingredients be perfectly united before the sublimation is begun. It is necessary to pulverise the sublimate, before the mercury is added to it; but this may be safely performed with a little

caution; especially if, during the pulverisation, the matter be now and then sprinkled with a little spirit of wine. This addition does not at all impede the union of the ingredients, or prejudice the sublimation: it will be convenient not to close the top of the subliming vessel with a cap of paper at first (as is usually practised), but to defer this till the mixture begins to sublime, that the spirit may escape.

The rationale of this process deserves particular attention; and the more so, as a mistaken theory herein has been productive of several errors with regard to the operation of mercurials in general. It is supposed, that the dulcification, as it is called, of the muriated quicksilver, is owing to the spicula or sharp points, on which its corrosiveness depends, being broken and worn off by the frequent sublimations. If this opinion were just, the muriated quicksilver would become mild, without any addition, barely by repeating the sublimation; but this is contrary to all experience. The abatement of the corrosive quality of the sublimate is entirely owing to the combination of so much fresh mercury with it, as is capable of being united; and by whatever means this combination is effected, the preparation will be sufficiently dulcified. Triture promotes the union of the two, whilst sublimation tends rather to disunite them. The prudent operator, therefore, will not be solicitous about separating such mercurial globules as appear distinct after the first sublimation. He will endeavour rather to combine them with the rest, by repeating the triture and digestion.

The college of Wirtemberg require their *calomel* to be only twice sublimed; and the AUGUSTAN but once; and NEUMANN proposes making it directly, by a single sublimation, from the ingredients which the muriated quicksilver is prepared from, by only taking the quicksilver in a larger proportion. If the medicine, made after either of these methods, should prove in any degree acrid, water, boiled on it for some time, will dissolve and separate that part in which its acrimony consists. The marks of the preparation being sufficiently dulcified, are, its being perfectly insipid to the taste, and indissoluble by long boiling in water. Whether the water, in which it has been boiled, has taken up any part of it, may be known by dropping into the liquor a ley of any fixt alkaline salt, or any volatile alkaline spirit: if the decoction has any mercurial impregnation, it will grow turbid on this addition; if otherwise, it will continue limpid. But here care must be taken not to be deceived by an extraneous saline matter in the water itself: most of the common spring waters turn milky on the

addition of alkalies; and therefore, for experiments of this kind, distilled water, or rain water, ought to be used.

The *mercurius dulcis sublimatus*, has been commonly called *Calomelas*, and *Aquila alba*; names which are now dropt by the Edinburgh college. *Calomelas*, though yet retained by the London college, is indeed a very improper name for a white preparation, the word implying a black colour. By grinding *mercurius dulcis* with volatile spirits, it becomes blackish, and this perhaps is the true calomel.

Calomel appears to be one of the most useful preparations of this mineral: it holds an intermediate place between the *hydrargyrus acetatus*, which is one of the mildest saline preparations, and *hydrargyrus muriatus*, one of the most acrid.

Calomel is considered as a good *stomachic*, *diaphoretic*, and *alterant*; is an efficacious medicine for clearing the hepatic system, either given alone, joined with *antimonials* (which increase its powers very remarkably), or with other of the cholagogues. Many of the more elaborate processes are no other than attempts to produce from mercury such a medicine as this really is. The dose, for a horse, is from ten grains to forty, or more, given in the form of a bolus, every night, as an *alterative*. If this course be continued it will occasion fore gums, though not affect the mouth so violently as in the human subject. A case of glanders was successfully treated by the PROFESSOR at the VETERINARY COLLEGE, in this way. See GLANDERS. By this method also, the *obstinate cutaneous disempers* of cattle have been cured, without any remarkable increase of the sensible evacuation. When used to destroy worms, it is given in the dose of one or two drachms, and joined with aloes. See BOTTS and WORMS.

CALORIC (from *calor*), HEAT, or the MATTER OF HEAT. LAVOISIER, in giving his reasons for the adoption of this term, says, "All bodies are either *solid*, *liquid*, or in a state of *aëri-form vapour*, according to the proportion which takes place between the attractive force inherent in their particles, and the repulsive power of the heat acting upon these; or in proportion to the degree of heat to which they are exposed. It is difficult to comprehend their phenomena, without admitting them as the effects of a great and material substance, or very subtle fluid, which, insinuating itself between the particles of bodies, separates them from each other. This substance, whatever it is, being the cause of heat; or, in other words, the sensation, which we call *warmth*, being caused by the accumulation of this substance; we cannot, in strict language,



distinguish it by the term *heat*, because the same name would very improperly express both cause and effect." He therefore gave it the names of *igneous fluid*, and *matter of heat*. But these being considered as periphrastic expressions, which both lengthen physical language, render it more tedious and less distinct, and frequently not conveying sufficiently just ideas of the subject intended, the cause of heat, or that exquisitely elastic fluid which it produces, therefore, has been distinguished by the term *CALORIC*, considered as the respective cause, whatever that may be, which separates the particles of matter from each other.

*CALTHA*, the marsh marygold, the name of a perennial plant, growing naturally in the low meadows in many parts of England. M. Duhamel recommends this plant to the notice of farmers, as very useful to be cultivated as a winter pasture for cattle; and experience has justified his recommendation. Perhaps it might prove as useful in this country as in France, especially as cattle are known to be extremely fond of it, and the plant might be easily cultivated.

*CALX*. This word is applied to whatever is subject to calcination, or chemical corrosion. See *CALCINATION*. It also comprehends many different stones, in this one character, viz. they burn to lime. Hence *LIME-STONE*, *calcarius lapis*; also called *saxum calcarium*, *abesum*, *algerie*; *algerie*; *ancora*; *carium terra*; is a general name for all those stones from which quick-lime is commonly prepared. They contain a portion of sulphureous matter, and the marine acid; but though the limes prepared from different stones answer many general purposes equally well, they differ greatly in their efficacy in many chemical and other kind of experiments.

When stones of the sparry kind have been calcined by the fire, they are converted into *quick-lime*, called *CALX VIVA*. When calcareous stone is either figured or transparent, it takes the name of *SPAR*.

Quick-lime dissolves in nitrous, marine, and vegetable acid, unites with the vitriolic into an indissoluble and insipid concrete, produces heat on mixture with water, and gives to the water a medicinal quality. If quick-lime is exposed to the atmosphere, it falls into a powder, and loses all the distinguishing properties of quick-lime, except that it retains its acrimony longer in a moist than in a dry state.

The stones from which quick-lime is produced contain a large quantity of air, which, in calcination, is expelled: hence strong quick-lime raises to effervescence, or emits no air-bubbles during its dissolution in either acids or alkalies.

Quick-lime is employed for increasing the activity of alkaline salts, for making the milder kinds of caustics, and for destroying the hair on places where it is thought to be unseemly; it dissolves sulphurs and vegetable resins, and produces many effects similar to those of the fixed alkaline salts.

Lime-water, which is frequently employed as a topical remedy in ulcers, diseases of the skin, &c. in cattle, is prepared in the following way:

#### *AQUA CALCIS, Lime-water.*

Take of quick-lime, half a pound;

Boiling distilled water, twelve pints:

Mix, and set it aside in a covered vessel for one hour; then pour off the liquor, which keep in a close vessel.

The quantity of lime dissoluble in water is much greater than is generally suspected. Dr. Alston observes, that one third of the quick-lime is soluble in water; (see his *Dissertation on Quick-lime*). The above method of making lime-water limits the quantity of water too much, for the lime requires several hundred times its weight of water to dissolve it.

Lime-water is a solution of the quick-lime in water, and receives no improvement from the ingredients added in the compound sorts which used to be ordered, for they precipitate much of the lime which the water suspended. When the lime-water loses its taste, so does it its virtues. It has a strong styptic taste, which is followed by a sweetish one; it changes the juices of blue flowers to a green; it precipitates metallic bodies that are dissolved in acids; it tinges silver of a copper hue; it turns red wine to a dark colour; and by those properties its strength may be estimated.

The specific gravity of water is increased by the lime more than the weight of the calcareous matter taken up, on account, perhaps, of the water being deprived of its air.

If lime-water is kept close, it may be preserved many months; but in open vessels, the calcareous matter soon separates from the water, and concretes on its surface. The pinguious scum which floats upon the surface of lime-water that is fresh made, is called *calcis vivi flores*, but its medicinal virtues are inconsiderable.

*CALX OF ANTIMONY*. See *ANTIMONIALS*.

*CALX OF QUICKSILVER*. See *QUICKSILVER*.

*CALYCANTHEMUS* (from *calyx*, the cup of a flower, and *ανθος*, a flower), in botany, means having the cup or calyx covered with flowers.

*CALYCIFIBRÆ* (from *calyx*, the cup of a

*flower, and fibra, a fibre*); in botany, a natural class, whose calyx or cup has the appearance of being fibrous.

**CALYCVLUS**, **CALYCLE**, from **CALYX**, which see below. A row of small leaflets placed at the base of the calyx, on the outside. Calycle of the seed is the outer proper covering or crown of the seed, adhering to it, in order to facilitate its dispersion.

**CALYPTER** (from *καλυπτω*, to hide). A carnosous excrescence covering the hæmorrhoidal vein.

**CALYPTRA** (from *καλυπτω*, to hide). A VEIL. It is the thin involucre or cover of some seeds, used by former botanists to express that which LINNÆUS means by *arillus*: also a thin cup which covers the *antheræ* of some of the mosses.

**CALYX**, *Cálix*, or *Empalement* (from *καλυπτω*, *tego*, to cover), in botany, the first of the seven parts of fructification, by LINNÆUS defined to be the outer bark of the plant present in fructification. In general it is that green cup which supports the bottom of the corolla, and is otherwise called the *perianthium*, or cup, *involucrum amentum*, or katkin, *spatha*, or sheath, *gluma*, or husk, *calyptra*, or veil, or *volva*, or curtain, as it happens to be differently circumstanced. It is generally single; in some plants double; and in others entirely wanting. It is commonly divided into the same number of segments with the corolla. The calyx commonly withers when the fruit is ripe, not before; which circumstance infallibly distinguishes it from *bractææ* in dubious cases. It is generally less in point of height, but more substantial than the corolla.

**CAMARA**, or **CAMARIUM** (from *καμαρα*, a vault). The fornx of the brain. Likewise the vaulted part of the auricle, leading to the external foramen.

**CAMAROMA** **CAMAROSIS** (from *καμαρα*, a vault; also an *arched roof*); a fracture of the skull, which appears like an arch of a vault. Called likewise *Cameratio*.

**CAMOMILE**, or **CHAMOMILE**. See **CHAMOMILE**.

**CAMPHOR**, **CAMPHORA** (from the Arabic term *caphura*); called also *caf*, *casa*, *casar*, *ligatura Veneris*, *caphora*; *capur*, *alkefor*, *altefor*. It is a solid concrete, chiefly obtained from the woody part of some trees, which are met with in the island of Borneo in the East Indies, and in Japan; it is only from the latter that it is brought into Europe. The Indians have a species, which they distil from the roots of the true cinnamon trees, that they call *baros*. See **CINNAMOMUM**. And also a species which separates

from the *camphora oleum*, on re-distilling it. It sometimes oozes from the bark of the root of the cinnamon tree in the form of oleous drops, which insensibly concrete into white grains. These are called *caphura baros Indorum*. In the state camphor is extracted from the roots of the camphor tree, it is named *camphora rudis*. But it is obtained chiefly from the **LAURUS CAMPHORA**, or the laurus fol. triplinervis lanceolata-ovatis nitidis, petiolis laxis, floribus parvis albis of LINN. The **CAMPHOR-TREE**. Cl. **ENNEANDRIA**, Ord. **MONOGYNIA**. Gen. Plant. 503. In smaller quantities it is obtained from some cinnamon trees, and in very small quantities from several other vegetables. That in Japan is extracted from a large tree of the bay kind, called *lauro camphorifera*, and, by LINNÆUS, laurus foliis trinervis lanceolata-ovatis; nervis supra basin unitis.

As first sublimed or distilled from the wood, it is of a brownish colour, and composed of semipellucid grains, mixed with some impure matter; in this state it is imported by the Dutch, then called *camphora elaborata*, unpurified camphor. It is purified by a second sublimation, &c. but after a manner only known to themselves, except the Venetians, who formerly were the only refiners of it: the last process in the management is so contrived, that the head of the subliming glass is kept warm enough to make the *camphor* run together into a mass of its own figure, in which form it is found in the shops.

*Camphor* is a vegetable concrete, unctuous to the touch, with a fragrant smell, somewhat like that of rosemary, and a bitter aromatic pungent taste, accompanied with a sense of coolness on the tongue: it is volatile like essential oils, but without their acrimony: it also differs both from them and from the sebaceous oils, in suffering no sensible alteration from long keeping, in being totally exhalable in a warm air, without any change or separation of its parts, and subliming unaltered in the heat of boiling water, &c. It burns in water, it receives no empyreumatic impressions, nor does it suffer any resolution from any degree of fire, to which it can be exposed in close vessels, though readily combustible in the open air. It dissolves in concentrated mineral acids, rectified spirit of wine, oils, &c. but not in water, in vegetable acids, nor alkaline liquors. It melts into an oily substance, with a less degree of heat than that of boiling water; laid on a red-hot iron it totally evaporates in a bright white flame and copious fumes, which, condensing, form a foot.

*Camphor* is said to be good, if, when put upon hot bread, it turns moist: if it becomes dry it



is bad. It should be kept close in a bottle or a bladder; not to prevent it from losing its quality, but to prevent the whole of it from exhaling away.

The ancient Greeks do not mention *camphor*: it was first employed in medicine by the Arabians.

As *camphor* is so extremely useful a medicine in a variety of cases, it is necessary to give its effects on the human machine in the clearest point of view which we are able. And first, the question is, whether its power is of a stimulant or sedative nature? Dr. Cullen seems clearly to have proved the last, when taken into the human stomach;—externally it is certainly stimulant, for when taken into the mouth it has an acrid taste, and, though by its evaporation it excites a sense of cold air, what remains is a sense of heat in the mouth and fauces. When taken down into the stomach it often gives pain and uneasiness, which he imputes to the operation of the acrimony upon the upper orifice. When applied to any ulcerated part, it perceptibly irritates and inflames: these are marks of its stimulant power. When thrown into the stomach of brute animals, it operates there by a small portion of its effluvia; for when a mass of any bulk has been thrown in, though it has produced considerable effects on the body, neither the bulk nor weight were found sensibly diminished; hence he concludes the operation has been upon the nerves of the stomach, and by these on the rest of the system, and the operation to be entirely that of a sedative power. However, the sudden death of many animals occasioned by it, as experimentally proved, shew still more evidently its sedative effect on the sensorium, which destroys the mobility of the nervous power, and thereby extinguishes the vital principle. It can no other way be accounted for; for *camphor* first operates by inducing stupor and sleep, and the other symptoms of delirium. Furor and convulsions can all be explained by the struggle which occurs between the force of the sedative power, and re-action of the system, as in cases of other poisons. It evidently shews no stimulant power on the sanguiferous system; for the pulse, where it has been observed, has been slower than before its effects took place, by ten strokes in a minute.

*Camphor*, though supposed to have a poisonous effect on quadrupeds, may, however, on very many occasions, be administered to the horse with safety and advantage. United with antimonials, opium, or saline medicines, it forms a powerful sudorific. In spasmodic diseases of the intestines, and in the early attacks of locked jaw,

it is particularly useful, as also in chronical disorders originating from violent colds or excessive exertions. It may be given likewise, with mercurial alteratives, in certain stages of the farcy: if it is thought necessary to administer *camphor* in a liquid state, it may be rendered pulverable by moistening it with a little spirit of wine, and, with the addition of a moderate proportion of white sugar, it will unite, when gradually mixed, with boiling water. As an external application, *camphor* ranks highly in the *Materia Medica* of veterinary practice. When dissolved in spirit of wine, in the proportion of two ounces to a pint, with an equal quantity of soap, it forms an excellent embrocation for sprains in what are termed the *back-sinevus*, bruises on the back or other parts, tumors arising from external violence, &c. It may be mixed with cataplasms for internal foreneses of the throat, in inflammations of the maxillary glands, and in gangrenous diseases of the tail from NICKING or DOCKING.

The London College also have ordered the following for external uses:

#### *Camphorated Spirit.*

Take of camphor, four ounces;  
Rectified spirit of wine, a quart:

Mix them so that the *camphor* may be dissolved.

An ounce of *camphor* will dissolve in less than an ounce and a half of spirit; and in these solutions it does not exhale, for the spirit must all be evaporated before the *camphor* will depart.

#### *Tartarised Spirit of Antimony.*

Take of camphor,  
Salt of tartar, of each equal quantities;  
Proof spirit, a proper quantity to allow the drawing off one half:

This preparation does not possess any great advantage over the plain camphorated spirit.

Different preparations are called oils of *camphor*, several of which may be seen in Neumann's Chemical Works, and other writers, but they do not appear to possess any peculiar advantage over the crude *camphor* dissolved in olive oil, or united with soap and caustic volatile alkali, in the form of a liniment. See LINIMENT.

CAMPORATA (from *Cámpora*; so called because it resembles it in smell). STINKING GROUND-PINE; called also CHAMÆPEUCE, and *camphorata hirsuta*. It is a low plant, a native of the warmer parts of Europe; it smells like

camphor, but hath something disagreeable beside. It is sometimes employed in sedative fomentations.

**CAMPHORATED OIL**, a mixture of olive oil, two parts, with one of *camphor*, is called *oleum camphoratum*; and is of use in inflammatory swellings requiring suppuration.

**CAMPHORIC ACID**, an acid produced by distilling the nitric acid, six, or eight times, from camphor. A crystallised salt is the result, called acid of camphor; which reddens syrup of violets, and the tincture of turnsole. Its taste is bitter, and it differs from the oxalic acid, in not precipitating lime from the muriatic acid.

**CANADA BALSAM**, a fine, grateful, colourless, and transparent turpentine, obtained from the Canada fir-tree, a species of the *ABIES*. It is discharged, during the summer heats, through incisions made in the bark. It is a good substitute for the balsam of capivi. See *CAPIVI*.

**CANCER** (from *καρκινος*, a crab). By the term *cancer*, the Roman writers understood what the Greeks called gangrene and sphacelus; but the disease which is now called *cancer* is what the Greeks and Romans meant by *carcinoma*, and *carcinus*. It was called also *lupus*, because it eats away the flesh like a wolf. When a malignant scirrhus, or a warty excrescence, hath proceeded to a period of ulceration, attended with a constant sense of ardent pain; is irregular in its figure, and presents an unequal surface; if it discharges fordid, sanious, or foetid matter; the edges of the sore being thick, indurated, and often exquisitely painful, sometimes inverted, at other times retorted, and exhibiting a serrated appearance; and should the ulcer in its progress be frequently attended with hæmorrhages, in consequence of the erosion of blood-vessels; there will be little hazard of mistake in calling it a cancerous ulcer.

That the horse is subject to a disease, which at last, has many of these characteristic signs of cancer, we may conclude from what some respectable veterinary writers have asserted.

Gibson, decisively, speaks of *cancerous ulcers* taking place in horses affected with the farcy and glanders. He says he has also known *cancers* to arise from rowels put in near the glandular parts, particularly one on the breast of a horse, which after it was taken out left a considerable knotty uneven swelling with a fetid discharge, which continued for some time, while the horse did his business tolerably well; but being put upon some harder work than ordinary, the swelling increased and became a very obstinate cancer, which soon proved mortal.

He adds, that he was once concerned with another very fine horse, that had a large cancerous ulcer, that took its origin from a "cancerous wart" on his flank, near the short ribs, on the near side; this seemed to have an adhesion to the tendinous parts of the muscles of the belly, and to some of the uppermost inguinal glands. It had been cut off once before he saw it; but was then as large as a penny loaf, and every day growing bigger, knotty and uneven, with a bloody stinking ichor over all its surface. He caused an instrument to be made on purpose to extirpate it, the blade about an inch and a half broad, and six inches long, turned round on the face like a table knife, with a blunt rounded point, the face of the instrument being only used in this operation; and having all other things in readiness, and the horse thrown on his opposite side in a riding house, upon a good quantity of straw, he passed one crooked needle armed or threaded with a piece of strong tape, through the bottom of the cancerated substance, and another crossways, and by taking hold of the four ends, pulled the whole swelling outwards, so that it was cut off with one stroke. It bled from several branches of arteries which had been greatly enlarged by a continual derivation of blood to the swelling (a thing usual in almost all fleshy excrescences), but this was soon stopped with little pledgets of lint, dipped in white of eggs, then strewed with powder of blue vitriol, and laid on the mouths of the blood-vessels, and over them a thick covering of dry tow. After three days the wound was opened and dressed with a proper digestive, and though it was flat and even when the substance was first cut off, it was now grown into a deep hole sufficient to bury the half of a two-penny loaf, occasioned by the great discharge of blood, and the dependent situation of the fore thickening and increasing, the bulk of the circumambient skin, and the *membrana adiposa* and *panicle* that lies under it. This luxuriant growth of flesh was kept for some time within compass, by strewing powder of red precipitate upon it, and applying this digestive:

Take eight ounces of common turpentine;

Honey, four ounces;

Verdigrise, half an ounce, in fine powder;

Tincture of myrrh, with aloes, two ounces. Mix.

But this not being sufficiently repressive, the cure went on but slowly; and though it was dressed every day after the first opening, yet it continued to discharge excessively; the sore had



still a cancerous look, and the matter was sometimes mixed with a fetid bloody ichor; so that it became necessary to substitute other dressings of lint dipped and dried several times in a solution of blue vitriol, till it was of a deep colour; this was laid dry over the sore every day, and over that a thick covering of tow, above which was a canvas bolster, bound round with a broad woollen surcingle, by which it was cured in a short time, leaving a small bald place no bigger than a half-crown piece, the original size of the wart from whence it took its rise. This horse continued well two or three years, but having two or three more dry warts when this was extirpated, particularly one on the inside of his thigh, which having a communication with the inguinal glands, and discharging a cancerous ichor, the gentleman to whom he belonged, was induced to part with him.

Mention is also made of a horse that had a cancerous wart on the inside of one of his nostrils, which began like a very small moist tetter or warble about the bigness of a pea; but in the space of some months grew as large as a common-sized fig, with a fetid bloody ichor, attended with a swelling and thickening in that nostril and upwards towards the eye. This was cured with great difficulty, by the actual cautery and caustic applications. There has also been observed a *cancerous* disposition in some cases of canker in the foot (see CANKER), an exuberant growth of new flesh resembling a cauliflower, being observed every time it was dressed, notwithstanding the dressings were chiefly oil of vitriol, butter of antimony, and such-like caustic remedies, assisted with close *stopping* of the foot. But these will be treated of in their proper place. Gibson mentions one instance more of a horse that had what he considered a *true cancer* among the *inguinal glands*, on the inside of his thigh. This affected his *sheath*, and the cavernous part of the penis, which was full of uneven, hard, knotty tumors, like ganglions or indurated kernels, "the ulcer being *cancerous* in all its symptoms." It had been a disease of long standing; the horse was emaciated, lean, and hide-bound, and had little appetite. Under these circumstances he declined meddling with it, but a common farrier undertook to cure it, and under his hands the animal died in a very short time.

Perhaps the more modern practitioner, in treating morbid exuberances from ill conditioned wounds, will be disposed to avoid the application of any *greasy* substances, and especially those termed *digeſſives*; relying rather on the actual cautery, dry astringent powders, and *pressure* where it can be applied.

CANELLA ALBA (from *canna*, a reed; as these barks have a reed-like appearance, from being rolled up in that form). Called also CANELLA CUBANA;—*Malabarica*;—*winterana*;—*Jamaicensis*;—*tubis minoribus alba*; five, CINNAMOMUM album;—*Malabaricum*;—*aromaticum lignum*; *aromaticus cortex*; *canninga*; *caryophylli suavis odoris*; *winterania canella*; *cortex winteranus spurius*; *castia lignea Jamaicensis*; *cortex corticosus*; *gingiberis amaritudo*; *arbor Jucadice*; WILD CINNAMON TREE.

Dr. Brown, in his Natural History of Jamaica, calls the tree *laurus fol. enerviis racemis terminalibus*; Weston, in his Universal Botanist, carries it from another edition of Linnæus, and says *Winterania canella*, or *Winterania Jamaicensis*, foliis enerviis obovatis obtusis nitidis, racemis terminalibus; cortice piperis modo acri, fructu viridi calysculato racemoso: Class DODECANDRIA; Ord. MONOGYNIA; Linn. Gen. Plant. 598.

The bark of this tree is commonly, but falsely, called *cortex winteranus*. It is a large tree, whose bark consists of two parts, an outward and an inward; the outer is as thin as a milled shilling, of an ash-grey colour, with whiter spots here and there, and several shallow furrows of a darker colour, running variously through it; the taste is aromatic. The inner bark is thicker than that of cinnamon, being as thick as a mild crown-piece, smooth, of a whiter colour than the outward, and of a more biting and aromatic taste, resembling that of cloves, and not glutinous when chewed, but dry, and crumbling between the teeth. Some call it the West-India cinnamon-tree.

It grows in Jamaica, Antigua, and other of the Caribbee Islands. The bark is the chief part in use, the poor natives use it in the place of all other spices; its virtues, though similar, are very weak. It is sold in England for the cort. winter. for its virtues are the same: it yields a heavy oil, which, when mixed with a little oil of cloves, is sold for it; but this adulteration is no prejudice to the oil of cloves.

This is among the strengthening remedies sometimes given to horses, and frequently joined with CINCHONA.

CANICÆ. Coarse meal was anciently thus called, from *canis*, a dog, because it was food for dogs. Hence *panis canicaceus*, very coarse bread.

CANICIDA (from *canis*, a dog, and *cedo*, to kill; so called because they are destroyed by eating it); a poisonous plant, more properly named ACONITE.

CANICIDIUM (from *canis*, a dog, and *cedo*

to kill); the dissection of living dogs, an odious and unjustifiable piece of cruelty.

**CANINE APPETITE** (from *canis*, a dog, and *appetens*, hungering). *Fâmes*. See **APPETITE** and **BULIMIA**.

**CANINE TEETH**, **CANINI DENTES**, called also *columellares dentes cynodontes*. The teeth betwixt the incisores and the grinders, of which there are one in each side, both in the upper and lower jaw, in most quadrupeds. Their roots are longer than those of the incisores, and therefore, from their fangs being supposed to extend the greatest part of the way to the eye, they have been called the **EYE-TEETH**. Their use seems to be to hold what is caught or taken. In Varro, and Pliny, they are called *columellares*.

The horse has four canine teeth, which are called **TUSHES**; (see *AGE of a HORSE*). Mares, however, are without them, except in a very few instances.

These teeth are most conspicuous in the **DOG**, from whence they derive their name.

**CANIS**. See **DOG**.

**CANKER**, called by the French *fic* or *crapaud*, is a diseased, debilitated, and vitiated action of the vessels that, in a state of health, are meant for the secretion of the sensible sole of the foot. It is generally to be found among the large, heavy class of horses, and particularly in the posterior extremities, from their being in the stable constantly exposed to the unhealthy qualities of the dung and urine. It consists of a formation of a fungous nature, frequently with appearances of the fibres of roots. This diseased production will sometimes obstinately resist the effects of the most active astringents, and the discharge from the contaminating vessels is so powerful, as to corrode and assimilate almost every part with which it may happen to come in contact. The disease termed **FRUSH**, or **THRUSH**, when neglected, will become canker.

In canker, Mr. St. BEL pointedly insists on the total removal of the insensible sole and frog; but, as the pain attending such an operation must necessarily be extremely distressing, from the firm adhesion of the parts, and as experience has proved that in the early and milder stages it is not required, we presume a less severe treatment will often be sufficient. Perhaps, in cases of a confirmed canker, of a long standing, we may be under the necessity of having recourse to what is commonly denominated *drawing the sole*: this is effected, by dividing the junction between the insensible sole and the horny substance; a pair of pincers and a strong hand, in common practice, usually accomplish the remaining part of the operation. However, when canker is con-

sidered as only in its infancy, every diseased portion of the foot should be removed by means of the *drawing knife*, or other instrument. The surface of the insensible sole and frog must then be accurately examined, and every part of the fungous production removed. When a corrosion of the coffin bone or of the cartilages has taken place, exfoliation is requisite, and may be procured by the application of the actual cautery to the affected spot (see **CAUTERY**). The wounds may then be dressed with dressings of tow moistened in spirit of turpentine, tincture of myrrh, or compound tincture of Benzoe. A bar-shoe will be preferable; and the cavity between the foot and the shoe should be so completely filled with tow, or other soft substance, as to produce a firm degree of pressure on the diseased parts. By the assistance of narrow plates of thin iron, applied across each other, having their ends within the shoe, this dressing will be properly retained: where the case will not admit of a shoe, the operator will find no difficulty in substituting some other method.—In about four days, the dressing may be removed, and another applied, composed of honey and burnt alum, which may be repeated every two days. Attention should be paid that the animal is so situated as to prevent, as much as possible, the admission of external moisture, and should the formation of the new substance prove of a fungous, pulpy disposition, a little powder of vitriolated copper or verdigrease, may be sprinkled on its surface. As canker very frequently resists, as we have before mentioned, the activity of the most powerful astringents, we are obliged to change the method of treatment; too long an adherence to particular medicines diminishing or destroying their original effects.

**CANKER IN DOGS**; a kind of disease of the skin of the ears, which is cured by a mixture of soft soap, sulphur, and verdigrise, rubbed in every day. Or the ointment of nitrated quicksilver may be used in the same way.

A disease of this kind is also said to affect the necks of pigeons. For the cure, we are told to wash the sores with a strong solution of alum in vinegar, or to apply vitriolated copper to the part now and then.

**CANON**, a name given to that cylindrical bone in the hinder leg of a horse, which is situated immediately below the hock. Mr. St. Bel gives an instance of this in p. 81 of his account of the proportions of the famous running horse *Eclipse*. It is remarkable, however, that, in the plate annexed to that description, the same bone in another figure (fig. 1) is named the *shank*.



**CANNON-MOUTH OF A BITT**; a round but long piece of iron, consisting sometimes of two pieces that couple and bend in the middle, and sometimes only of one piece that does not bend, as in the cannon-mouth of a *trompe*. Cannon-mouths of all sorts are designed to keep the horse in subjection; and are so contrived that they rise gradually towards the middle, and ascend towards the palate; to the end that the void space left underneath may give some liberty to the tongue. See **BITT**.

**CANTER**, a well-known pace of a horse, of which Mr. Richard Lawrence in his "Enquiry into the Structure and Economy of the Horse," gives the following satisfactory description.

"The canter," says he, "is not, generally, a *natural* pace. When the horse is excited to move his station from one place to another, he performs it with a velocity proportionate to the exciting cause. Thus he changes from the walk to the trot, and from the trot to the gallop, according to his inclination.

"In each of these changes he acquires an addition of speed; but as the trot is equal in speed to the canter, he seldom adopts the canter, but changes to the gallop, when he wishes to accelerate his motion. The horse is taught to perform the canter by shortening the gallop. To accomplish this he should be well formed in his hind quarters, and stand with his haunches well under him, as it is almost impossible to

make a horse canter whose hind legs stand far behind him, and whose fore legs incline greatly under his body. The concussion is not so great in the canter as in the trot, because the action is divided into four motions. Thus, if the horse leads with the off fore leg, the feet will come to the ground in the following succession, viz. the near hind leg, off hind leg, near fore leg, and off fore leg (shewn by Mr. L. in a beautiful engraving); but during this alternation, there is a period when three feet are on the ground at the same time, and in the same order as in the walk; for instance, the two hind feet and the near fore foot will be on the ground just prior to the moment when the off fore foot alights, which having taken place, the near hind foot rises from the ground, leaving the other three, viz. two fore feet and the off hind foot, stationary. This could not be represented in the plate, as it would have given the appearance of walking instead of cantering, but upon an attentive observation in the living subject, it will be found to be true. In the canter, the horse moves obliquely, by advancing either his right or left shoulder in conformity with the leading leg. Thus, if he leads with the right fore leg, the right hind leg must follow, and be advanced more under the body than the left hind leg. By this position, the feet describe a rhomboidal quadrangle, thus:



which gives greater stability to the body during progression, than if the animal moved with an equilateral projection of his limbs. If the horse leads with the right fore leg, and follows with the left hind leg, he is said to *canter false*. This may be easily felt by the rider, as the body of the animal will move in a tortuous unharmonious manner. Whenever this takes place, he should be stopped immediately, as he incurs the danger of falling. It is easiest to the rider when the horse leads with the off or right fore leg, because the rider holding the reins in the left hand, generally turns his body somewhat to the same side, which inclination accords also with the oblique direction of the horse's body. To oblige the horse to lead with the off fore leg, it will be necessary to shorten the near or left hand rein, and to press the horse's side with the left leg, and to apply the spur, if necessary. By shortening the left rein, his head and neck will be in-

clined to the left or near side, which will confine the motion of his near or left shoulder, and force him to advance the off shoulder, at the same time the pressure of the rider's left leg throws off the croupe to the right side, and gives the hind quarters the same direction as the fore quarters. If the horse is required to lead with his near or left leg, the right hand and heel must be employed for that purpose."

The canter is a kind of pace peculiarly accommodating to the sensations of the rider, since his seat is preserved with little or no exertion, whilst, at the same time, the progress he makes on the road is very considerable. The horse, however, is by no means in circumstances the most favourable to progression, or at least to a long continuance of it. See **PROGRESSION**.

**CANTHARIDES** (from *καὶ θάρπης*, a beetle, to whose tribe it belongs), *Meloe vesicatorius alatus viridissimus nitens*, Linn. the *Spanish fly*, accord-

ing to the common appellation. It is an insect of the beetle kind, considered as poisonous, and is found in Spain, Italy, and the southern parts of France. The cantharis is usually about half an inch in length, has a foetid urinous smell, and, on the upper side, is of a shining green colour, beautifully variegated with blue and yellow. These flies are selected from herbs and bushes, but in particular from the poplar and the ash, and the common method of killing them is by the steam of strong or distilled vinegar: they are afterwards dried by the heat of the sun. They require to be kept close from the air, and they will seldom retain their vesicating quality more than two years: those should be preferred that are of full colour and free from dust. The effects of cantharides (which are destroyed by heat) are said to arise from an acrid, resinous substance, possessing the power of inflaming and excoriating the skin, and of producing a plentiful discharge of serum. We believe that few professional veterinarians have attempted with any success the internal use of cantharides: in old books of farriery, indeed, they are boldly and blindly directed to be administered, in large doses, for suppression of the urine; with what consequences such a treatment would be accompanied we leave those who are acquainted with their stimulating, irritating, and inflaming powers, to conjecture. As an external application, however, it may be said they are daily useful. See the article BLISTER.

**CANTHUS** (*Kanthos*, a primitive in the Greek), AN ANGLE OF THE EYE. The canthi are those cavities at the extremities of the eyelids, which are called the corners of the eyes. The greater *canthus* is next to the nose; the lesser *canthus* lies towards the temples.

**CANULA** (a dim. of *canna*, a reed). A name for certain instruments in surgery: they are tubes of different shapes and sizes; introduced into openings for the conveyance of a fluid from the part.

**CAOUTCHOUC**, INDIAN RUBBER, or ELASTIC GUM; called also *Cayenne resin*, and *cautchuc*; is prepared from the juice of *siphonia elastica*, the elastic syringe tree of Cayenne, or other parts of South America. The Mexicans call it *clin*, or *olli*; and the Spaniards of that kingdom *ulé*. AUBLET calls it *beve à Guianensis*; in Jacquin's America it is named *echites corymbosa*; and LINNÆUS, in his Supplementum Plantarum, *iatropha elastica*. The genus of this tree is not yet ascertained. The Indians get the juice of this tree by incisions made through the bark in the lower part of the tree, from whence it oozes out under the form of vegetable milk, is

received in a vessel placed under the incisions, and, on exposure, gradually inspissates into a soft, reddish, elastic resin; and it is commonly brought to Europe in the form of pear-shaped bottles. It is soluble in rectified oil of turpentine, but more perfectly in æther. The distinguishing properties of this substance are, its solidity, flexibility, and elasticity, and its quality of resisting the action of aqueous, spirituous, saline, oily, and other common solvents: from which properties it becomes extremely fit for *bougies*, *catheters*, *syringes*, *peffuriers*, &c.; to which purposes it is frequently applied.

**CAPARASSON**, or HORSE CLOTH, a sort of cover for a horse. For led horses it is commonly made of linen cloth, bordered round with woollen, and enriched with the arms of the master upon the middle, which covers the croupe, and with letters in cypher on the two sides.

The caparasson for the army is sometimes a great bear's skin. Those for stables are of single buckram in summer, and of cloth in winter.

**CAPELET**, or CAPELLET, a swelling which horses are subject to, of a wenny nature, which grows on the hock, and on the point of the elbow. The capellets arise often from bruises and other accidents, and when this is the case, they should be bathed with hot vinegar and alum: but when they grow gradually on both heels or elbows, we may then conclude that blood is extravasated. In this case, suppuration should be promoted by rubbing the part with stimulating ointments, and when matter is formed, the skin should be opened with a lancet, in some dependent part towards one side, to avoid a scar. The subsequent dressings may be turpentine, honey, and tincture of myrrh.

The contents of these tumors are various; sometimes watery, and at others suety or like thick paste; which if care be not taken to digest out properly, with the cyst, will frequently collect again. The shortest method would be, to extirpate them with a knife, which if carefully executed, and the skin properly preserved, would leave very little deformity. Some of these tumors are best let alone, especially those of the watery kind, which will wear off insensibly, without any application but a little camphorated quicksilver ointment.

**CAPHORA**, or CAPHURA, names by which *camphor* has been called. See CAMPHOR.

**CAPICATINGA** (Indian); species of acorns which grow in the West Indies, larger and more useful than ours in Europe, of the same qualities, but possessing them in a greater degree.



**CAPILLACEOUS** (from *capillus*, a hair); resembling hairs or threads.

**CAPILLAMENTS** (from *capillus*, a hair), in flowers, are generally understood to mean the chives which support the apices, or tender filaments within the flower. They are those slender filaments that spring up within the leaves of a flower, and are more usually called the stamina; whence a capillaceous flower is also a staminate one. Again, by *capillaments* are meant those slender parts which resemble hairs, and are produced from vegetables; as, for instance, from seeds, roots, &c. RAY calls the stamens by this name.

**CAPILLAMENTUM**; the hairy or villous integuments belonging to animals. Called also *Capillitium*.

**CAPILLARY**, in botany, any thing that resembles hair. This term is applied to LEAVES, that are longer than the setaceous, or bristle-shaped leaf;—to GLANDS resembling hairs;—to FILAMENTS;—to the STYLE, and to the PAPPUS or DOWN affixed to some seeds.—This is by some called *pilófus*, opposed to *plumófus* or feathered. Ray calls those vegetables *capilláres* which have no main stalks, but whose seed is on the back of their leaves, for they grow close to the ground, as the hairs grow to the head.

**CAPILLARY VESSELS** (from *capillus*, a hair). The smallest vessels in an animal body are so called, because they appear as small as hairs.

**CAPISTRUM**; the name of bandage about the head, resembling a bridle; or rather a horse's head-stall.

**CAPITA** (plural of *caput*, head). Heads in plants are either those receptacles of the seeds, which by their globous figure represent a head, as the heads of poppies, &c. or they are the same as bulbs.

**CAPITATÆ**, applied to plants, are those whose seeds, with their down, being included within a squamous calyx, are conglobated into a roundish figure resembling a head. Hence are called *cephaloídes*, or *cephalótes*.

**CAPITATUS** (from *caput*, head), in botany, means having the flowers connected singly on the top of the stalk, so as to resemble a head.

**CAPITELLUM** (from *caput*, head); the head or seed-vessels, a term frequently applied to mosses, &c. as in capitulum.

**CAPITILUVIUM** (from *caput*, the head, and *lavos*, to wash); a bath or lotion for the head.

**CAPITULUM** (a dim. of *caput*, the head), in botany, a species of inflorescence, or a manner of flowering, in which several flowers form a kind of ball. As in *gomprena*, this is globular,

rounded, or halved, leafy or naked. Flowers in this case are said to grow in a head, *capitati flores*; a stigma round like a ball, *capitatum stigma*. In chemistry it is an *alembic*. In anatomy it is a smaller process or protuberance of a bone received by another bone.

**CAPIVARD**; a Portuguese name for a WATER-DOG. Lemery describes an animal under this name that is met with in Brasil, which stays in the water all day, and at night goes on the land to ravage the gardens and tear up trees. Its body is like a hog's, and its head resembles a hare's. Its flesh is good for food.

**CAPIVI BALSAM**, called also *copaiba*, *copaiva*, *capivus*, *album balsamum*. The tree which affords it is called *arbor balsamifera Brasiliensis*, *copaiba Brasiliensis*, and *baccifera arbor Brasil*, *fructu monopyreno folio sesquipedali*. It is the *copaifera officinalis*, or *copaifera fol. pennatis subrotundis, flore rubro*. The *balsam capivi* tree of Linn. Class, DECANDRIA; Ord. MONOGYNIA. Gen. Plant. 442. The tree grows spontaneously in the woods of Brasil, St. Vincent, and other of the British American islands. Deep incisions are made into the trunks of this tree, during the hotter summer months; one tree sometimes is met with that affords five or six gallons of *balsam*, but the same tree never yields it twice.

This *balsam* is at first limpid and colourless, and smells like calambour wood; as brought into Europe it is generally yellowish, and somewhat thicker than olive oil; by long keeping it becomes still thicker, but does not dry. In all states of its consistency, it continues clear and transparent. To the smell it is grateful, to the taste bitterish and biting; not intensely so, but durable.

To prove its genuineness, *drop it on paper; and if it spreads not, as oil, nor runs through, it is good*; on the contrary, if it spreads or sinks through, it is adulterated. We rarely have it genuine; the CANADA BALSAM is generally sold for it.

The *balsam capivi* is an article in some prescriptions for chronic diseases of the lungs in horses, and it is still more commonly employed in complaints of the urinary passages. But its qualities are nearly similar to those of turpentine, which is much cheaper, and equally useful for veterinary purposes.

Divided by the white of an egg, sugar, honey, or the powder of gum-arabic, it mixes with water into a uniform milky fluid. The best of these mediums is the gum, which should be used in the proportion of one part to three parts of the *balsam*. It easily mixes with distilled oils; but difficultly with expressed ones. If a small

quantity of alkaline salt is added to rectified spirit of wine, it perfectly dissolves this *balsam* into a fragrant liquor, more agreeable than the *balsam* alone.

**CAPNISTION** (from *καπνός*, *smoke*); the name of a sort of oil prepared of several kinds of spices with oil, by kindling the spices, and suffumigating the oil.

**CAPON** (from *capio*, *to take*), is so called because his testicles are taken away. The design of castrating a cock is to render him a fit leader for the other poultry, and also more fleshy.

**CAPRA.** See **GOAT**.

**CAPRIOLES**, are leaps that a horse makes in the same place without advancing; in such a manner, that when he is at the height of his leap, he strikes out with his hinder legs even and near. It is the most difficult of all the high manege. It differs from croupades in this, that in a croupade the horse does not shew his shoes; and from a balotade in this, that in a balotade he does not strike out. A horse will never work well at caprioles unless you put him between two pillars, and teach him to raise first his fore quarters, and then his hind quarters, while his fore are yet in the air; for which ends you must give the aids of the whip and the poinçon. Those who would teach a horse to make caprioles, and strike out handfomely with his hinder feet, must stay and help with the hand, and heels. The expressions used are, "This leaping horse takes to caprioles himself, for he makes equal leaps, and that upon the hand," *i. e.* without forcing the hand, and resting heavy upon the bridle. See the article **YERK**.

**CAPSICUM**, called also *piper Indicum*, *lada chilli*, *capo mola*, *piper Hispanicum*, *piper Lusitanicum*, *solanum urens*, *siliquastrum Plinii*, *piper Brasiliannum*, *piper Guineense*, *piper Calecuticum*, **GUINEA PEPPER**. It is the **CAPSICUM ANNUUM**, or **CAPSICUM caule herbaceo, pedunculis solitariis**; Class **PENTANDRIA**; Ord. **MONOGYNIA**; Linn. Gen. Plant. p. 252. It is in long, roundish, taper pods, divided into two or three cells full of small whitish seeds. It is a native of the East and West Indies. When this fruit is fresh it hath a penetrating acrid smell: to the taste it is pungent and acrid; it produces a painful burning in the mouth, like that from arum-root. Rectified spirit takes up its pungency, and if the tincture is evaporated, the remaining extract is excessively fiery. This kind of *pepper* is an ingredient in some cordial balls, but given in small quantities, as being one of the highest stimulants in the materia medica. It is most suitable in cold, sluggish, phlegmatic temperaments, in some paralytic cases, in relaxations and insensibility of the stomach, for correcting the activity of aloetic medicines, and removing cachectic symptoms, especially if joined with *cinchona*.

**CAPSULA** (dim. from *capsa*, or *capsule*, a little bag), in anatomy, is a bag consisting of broken or distended cellular or other membrane, formed by nature to inclose or lodge some extravasated fluid, or other matter contained in those tumors called encysted (see **TUMOR**). This is the same with *cystis*.

In **BOTANY**, it is the short pod, or husk of a plant, containing the seed. According to the number of cells for seed, the pod is called unilocular, bi-locular, &c. It has several members of which it is composed. 1st, The outer coverings called *valvule*. 2d, The partitions, *dissepimenta*. 3d, The central pillar, *columella*. 4th, Cells, *loculamenta*.

**CAPSULÆ ATRABILARIÆ**, also called **CAPSULÆ SEPALES**, and *glandulæ renales*; in the horse and other animals, are two little, oblong, flat, triangular bodies, lying at the upper end and inside of the extremity of each kidney; the right behind the vena cava, and the left behind the spleen and pancreas, being attached by vessels to those of the kidneys. When they are cut into, there seems to be a small cavity, containing a dark green fluid, from whence the name of *atrobiliary*; and if viewed when fresh, a white substance is seen where the vessels ramify; the inner part is a tender substance like the liver, so that it readily breaks down. Both the external and internal parts are vascular, and two or three large vessels may be observed in the middle, which give it the appearance of a juice, as above mentioned. Eustachius was the first who described these glands in the human subject. They are larger in the foetus than in the adult; but their use is not certainly known.

**CAPSULAR**, an anatomical term applied to the arteries and veins of the renal glands, which are thus called because they are inclosed by a capsula. The extreme parts of the vasa deferentia also have their cavities dilated in the manner of *capsules*. Their use, in the horse, is to transmit the semen from the testes to the vesiculæ feminales.

**CAPSULAR LIGAMENT** (from *capsula*); also called mucilaginous *ligaments*, as they contain many glands to separate the **SYNOVIA**, or joint-oil. Every articulating bone is furnished with a *capsular ligament*, which ligament is composed of two layers; the external layer is the stronger, being made by the periosteum; the inner is thin and uniform.

The use of the capsular *ligament* is, 1st, to connect the bones; 2dly, to confine the synovia.



They are long and large in those bones that are designed for rotation, to give room for motion; and tendons are frequently inserted into them, that by their action they may draw them outward, and prevent their being pinched.

They are generally of an equal thickness all round in the enarthrosis and arthrodia; but in the ginglymus they are thick on the sides, and thin on the fore and hind parts, as in those places their thickness would have been inconvenient, by hindering the due flexion and extension of the joint; but the tendons strengthen the joint in that part, and partly compensate for the weakness of the *ligament*. In complete luxations, the *capsular ligament* is generally, if not always, ruptured.

The *capsular ligament* of the head of the humerus proceeds from the edge of the glenoid cavity in the scapula, and is continued over the hemisphere of the head of the os humeri, and is fixed near its edge towards the muscular surfaces of the great and small tuberosities, and runs down on the neck of the bone, below the lowest part of the cartilaginous hemisphere. In all this course, the capsular is closely fixed in the bone, except a small portion, where it passes over the inner articular tendon of the biceps muscle.

The *capsular ligament* always includes the whole joint. Of collections within the *capsular ligaments* of the joints, and the effects of exposure in consequence of penetrating wounds, &c. See the articles BURSÆ, JOINT, &c.

CAPUR (Arabic). See CAMPHOR.

CAPUT MORTUUM, a *dead head*, in the old chemistry, the dry fæces left in a vessel after the moisture has been distilled from it. It is also called *terra damnata*, and *mortua terra*. The earthy part of moist bodies serves as a basis to the other principles; it is that which brings them together, which unites them, and which gives to them their solidity. When the active principles are extracted, it is called *caput mortuum*. It has the name of *caput*, before the separation, because it contains the spirituous and essential parts of the compound, as the head of an animal contains its subtle parts; and afterwards it receives the epithets of *mortuum* and the term *damnata terra* on a supposition that, being deprived of these active principles, it is not capable of producing any effect. The contrary however is the fact in some instances.

CARA BRASILIENSIS, called also *igname*, *inbame*; *battatas Hispanica*. Ray mentions three kinds of it. Besides, it is a name given by the old Roman authors to a plant with large and esculent roots. The soldiers of Cæsar are said, in some of their marches, when distressed for pro-

vision, to have made a sort of bread of this root; and P. ÆGINETA and DIOSCORIDES inform us that this plant is of the *passinacha*, or parsnip kind. It was probably the *elofoboscum*, or wild parsnip, which has roots long and thick, and of as good a taste as those cultivated in gardens, only they were not quite so tender. It is supposed that our word carrot is derived from this CARA.

CARACOL, in the manege, is an oblique piste, or tread, traced out in semi-rounds, changing from one hand to another, without observing a regular ground. When horses advance to charge in battle, they sometimes ride up in caracols, to perplex the enemy, and make them doubtful, whether they are about to take them in the front or in the flank. *Caracol* is a Spanish word, and in that language signifies the motion that a squadron of horse makes, when, upon an engagement, the first rank has no sooner fired their pistols, than they divide and open into two half ranks; the one wheeling to the right, and the other to the left, along the wings of the body to the rear. Every rank observes the same order after firing; and the turning or wheeling from the front to the rear is called a *caracol*. To *caracol*, is to go in the form of half-rounds.

CARACOSMOS; a name given to four mares' milk which the Tartars so much admire.

CARANNA (Spanish), also called *Caragna*, a concrete resinous juice brought from New Spain, and other parts of America, in little masses, rolled up in the leaves of flags, outwardly of a dark brown colour, inwardly brown, with a cast of red, variegated with irregular white streaks, somewhat soft and tenacious as it first comes over, but in length of time growing dry and friable. The whiter the gum the better it is, especially if of the consistence of a plaster. Its virtues are the same as those of *ta-camahaca*, but more efficacious. It has an agreeable smell, with a bitter and slightly pungent taste. Rectified spirit dissolves three-fourths of it, and water dissolves all the rest, except the impurities. By distillation it affords much essential oil, of an orange colour. It is fragrant, and to the taste moderately pungent. If the spirituous tincture is inspissated, it yields a tenacious resin, and an oily matter, which separates and floats on the surface: it is considerably aromatic, and moderately bitter. It is sometimes an ingredient in stimulating plasters, but scarcely known in veterinary practice.

CARBON (from the Hebrew term *charak*, to burn, or *charbab*, burnt). See CHARCOAL.

CARBONATES; salts formed by the union of carbonic acid with different bases; as *Carbonate of copper*, &c.

**CARBONIC ACID**, the new chemical name for that species of gas called *fixed* or *fixable* air.

**CARBUNCLE** (from *carbo*, a *burning coal*); a gangrenous spot upon the human skin, having the appearance of a burn, with red, livid, or black vesicles, bounded by an inflammatory ring, which soon terminates in a hard black eschar. The *anthrax* is an affection of somewhat the same nature with the *carbuncle*, only the former is more prominent, penetrates deeper into the adipose membrane, and occasions a higher degree of pain and inflammation. Brute animals are not deemed subject to this disease.

**CARCAX** (from *κεφαλα*, a *head*); a species of poppy, with a very large head.

**CARCINOMA**, and **CARCINOS**, that kind of cancer in the human subject which attacks parts that are not glandular; beginning on the surface. It *sometimes* also signifies the cancer of the female breast, *only* in its ulcerated state. See **CANCER**.

**CARDAMINES** (from *καρδια*, the *heart*; because it is said to strengthen the heart). Also called *cardamantica*, *naflurtium aquaticum*, *culiflas*, *iberis*, *herba veteribus ignota*, *sophia*; MEADOW-CRESSSES, LADIES-SMOCK, and CUCKOW-FLOWER. The **CARDAMINES PRATENSIS**, or **CARDAMINES foliis pinnatis foliolis radicalibus sub-rotundis**; *caulinis lanceolatis*. Class, **TETRADYNAMIA**; Ord. **SILIKUOSA**; Gen. Plant. Linn. 812. spec. 11.

This plant grows about a foot high; its lower leaves are pinnated; each leaf consists of four or five pair of small, roundish pinnæ, not always set directly opposite, having one single; that at the end larger than the rest: the stalk is smooth and round, bearing leaves which are less, and have narrower pinnæ. The flowers grow several together at the top, each consisting of four roundish leaves, of a white colour, or, in some plants, having a dash of purple, with darker veins running through them. The seeds are small and reddish, growing in long slender pods. The root is small and fibrous. It grows in meadows, and flowers in April.

This plant has the character of being a good antispasmodic and anti-epileptic, and appears in the prescriptions of some of the old farriers.

**CARDAMOM**, **CARDAMOMUM** (from *καρδαμυς*, and *αμωμον* because it participates of the nature of both); the COMMON or LESSER **CARDAMOMIS**, called *alfoelettari*, are the seeds of the **AMOMUM CARDAMOMUM**, or **AMOMUM REPENS** *scapo, bracteis alternis laxis, caule brevior*. Class, **MONANDRIA**; Ord. **MONOGYNIA**; Gen. Plant. Linn. 2. spec. 3.

*Cardamoms* are a dried pod, with seeds, brought from Malabar in the East Indies; the

best comes from Comagene, Armenia, and the Bosphorus. They grow also in Arabia. These pods are divided internally into three cells, in each of which are two rows of triangular seeds, of a brownish colour on the outside, and white within. The plant grows in the form of our reeds.

The lesser *cardamoms* have short triangular husks, scarce half an inch long. The seeds, freed from their husks, are a grateful aromatic, warm, but not fiery, and not subject, like the peppers, to create immoderate heat. The husks should only be separated at the time of use; for the seeds lose much of their flavour if taken out. They give out all their virtue to spirit, and nearly so to water. In distillation with water, a large quantity of essential oil rises; it is pungent to the taste, and smells stronger of the seeds; the remaining decoction is bitter and mucilaginous, but void of the flavour and warmth of the seeds. A spirituous tincture, when evaporated, leaves the virtues of the seeds almost all in the extract, which is more grateful than the seeds themselves. They are considered as gentle stimulants of the stomach, cordial, carminative, and antispasmodic; but without that irritation and heat which many other of the aromatic spices are apt to produce. However, they are employed in veterinary practice merely as an aromatic. The greater *cardamoms* are not materially different from the other in their medical qualities.

**CARDIA** (from *καρπ*, *cor*). By this term the ancients meant the heart; but we call the upper orifice of the stomach *cardia*, from its nearness to, and sympathy with, the heart.

**CARDIACA**, the herb called Motherwort. It is also called *agripalma gallis*, *marrubium*, and *cardiaca crisp*a, Ruellii. It is the *leonurus cardiaca*; Class, **DIDYNAMIA**; Ord. **GYMNOSPERMIA**; Gen. Plant. 722. Linn. It is called *cardiaca* because it is cordial in its effects, and relieves disorders of the stomach. It is a large plant, with square branched stalks, the leaves set in pairs on long pedicles at the joints, and the flowers in clusters round the upper joints. The leaf is dark-coloured, cut deep into three sharp-pointed, indented segments, of which the middle one is the longest, and the two lateral ones commonly again deeply cut. The flower is purplish, labiated, with the upper lip long and arched, the lower short, and cut into three sections. It is biennial, grows wild in waste grounds, and flowers in July.

**CARDIACS**, or **CORDIALS** (from *καρδια*, the *heart* and *upper orifice of the stomach*; because they not only act by the immediate application of stimulus to the heart, but also produce sym-



pathetic effects on that organ by their application to the stomach). In pharmacy a cardiac signifies an aromatic medicine, which warms the stomach and quickens the pulse. This is the effect of cordial balls given to cattle; see BALL. The effect of *cardiacs*, however, is only temporary; since, far from communicating permanent strength and vigour to the animal system, their secondary effects are directly subversive of that principle, and they produce *indirect debility* by long continuance, in the same manner as ardent spirits destroy the powers of the human stomach.

CARDIALGIA, the disease called the heart-burn, or rather a pain and uneasiness at the upper orifice of the human stomach; from *καρδία*, the left orifice of the stomach, and *αλγέω*, to be pained. Brute animals are not subject to this disease, or at least we have no means of knowing that it occurs in them.

CARDINAMENTUM (from *cardo*, a hinge). A hinge-like articulation. See DIARTHROSIS.

CARDITIS (from *καρδία*, heart), an inflammation of the heart.

CARDUUS BENEDICTUS, the blessed thistle; also called *cnicus sylvestris*, *cardui lutei procumbentis sudorifici et amari*; is the CENTAUREA BENEDICTA, or the CENTAUREA calycibus duplicato spinosis lanatis involucriatis, foliis semidecurrentibus denticulato-spinosis. Class, SYNGENESIA; Ord. POLYGAMIA FRUSTANEA; Gen. Plan. Linn. 984. It is a plant with rough, narrow, jagged leaves, situated alternately, terminating in soft prickles, and large hairy branched stalks, leaning to the ground, on the tops of which grow large, scaly, prickly heads, including a number of yellow flosculi, which are followed by oblong striated seeds inclosed in down. It is a native of Spain and some of the Archipelago islands, and is annually sown with us in gardens.

The leaves have a penetrating bitter taste, not very strong or durable in the mouth; when fresh they are more ungrateful than when dry. This plant, though supposed to possess extraordinary medical virtues, as its name imports, is not found to excel several other of the simple bitters; though Bergius considers it as antacid, corroborant, stomachic, sudorific, diuretic, and eccoprotic. It has a place in some of the prescriptions of the old farriers.

CAREER. This word signifies both the ground that is proper for the manege and course, and race of a horse that does not go beyond two hundred paces. The language on this occasion is, "This barb makes a very good career, from pacing to stopping." "This English horse does not finish his career;" that is,

does not finish his course with the same swiftness; and does not move so short and swift at the middle and end as at the beginning. "This Spanish horse is fit for the ring; he has a short and swift career, and holds it an hundred paces."

CARICUM, or CARYCUM; from *Caricus*, the inventor. The name of a medicine for deterring ulcers. It is prepared of the black hellebore, cantharides, and several other things mixed together. It is also the name of an oil mentioned in Athenæus, lib. ii.

CARIES (from *καίω*, to abrade; or from *karah*, to dig in, a Chaldee word); a partial mortification of the bone, which separates from the sound part sooner or later. Dr. Cullen names it *exulceratio ossis*. Indeed, every species of *caries* attended with loss of substance may without impropriety be termed an ulcer.

This corrupted state of the bone happens when it has lost its living principle, or when it is deprived of its periosteum, from which cause having lost its natural colour, it becomes pinguinous, yellow, brown, and at last black. This state, which is the first degree of *caries*, was called by the ancients *os vitiatum*, *ossis nigrities*; but the greatest degree is when the bone is corroded, discharging a sanies which consumes the adjacent flesh. With the many names given to *caries* we have nothing to do; since, in the horse and other quadrupeds, it is simple and obvious.

As the signs and progress of this disease of the bone are the same in the brute as in the human subject, we shall here state the doctrines of medical men as far as they bear a general application to the subject.

That an inflammation of the periosteum is tending to a *caries* of the bone, is known, first, from the signs of inflammation preceding; secondly, a freedom from pain in the affected part, without a manifest cause; thirdly, from a dense, slow, increasing, and not very painful tumour of the superincumbent parts. But among the signs of a beginning *caries* of the bone, the sudden removal of pain is fallacious, for this happens in inflammation of the periosteum, when the latter is corroded so as to admit the matter to escape betwixt the muscles, though in general, when pain is relieved by a resolution of inflammation, it goes off gradually only; but a favourable resolution hardly if ever happens after a violent inflammation. Again, when a *caries* is threatened, the taint is propagated through the cellular membrane, which, by slight causes, is often raised into a large tumour. This has not the hardness and resistance observable in a tumour arising from phlegmon, but it will be flaccid,

and hardly sensible of pain. We may readily, by means of a probe, discover a *caries* of the bone, since the probe will penetrate less or more, according as the *caries* is superficial or deep. When the probe comes to the sound part of the bone, it is resisted. If the bone be visibly bare, its state is easily discerned, though sometimes it is covered with a grumous matter, which, when rubbed off, discovers the bone of a dead-white, brown, or black colour. If the white be porous, the *caries* may possibly be deeper than if black and hard. If the bone lies so hid as that we cannot feel it with a probe, yet sometimes we may judge it carious from the quantity and quality of the matter which is sanious. If the bone lies near the surface, and the flesh is lax and of an unnatural colour, it is strongly to be suspected that the bone is carious: but *if the matter be fetid and oily, it is still a more certain sign of caries.*

Ulcers of long continuance near a bone are sometimes forerunners of a *caries*. When a *caries* is under an ulcer, the flesh over the caries is soft, flaccid, and fungous; the lips of the ulcer inverted, the sanies thin, fetid, and full of small black scales, nor can the ulcer be healed, at least only superficially, and it soon breaks out again. See **ULCER**.

Monro gives a particular account of several species of *caries* affecting the human subject; but these are not applicable to brute animals, whose diseases are remarkably simple, and the powers of restoration exceedingly strong. What has been said will therefore suffice as far as the description of the disease is concerned. Something must now be said of its treatment.

In considering the nature of a *caries*, we should remember, that the bones have their vessels and circulating fluids, and the same general texture as the soft parts: so that solidity, and a stronger cohesion of parts, are the only evident distinguishing characters of the composition of bone.

The cure of a *caries* depends on removing easily and speedily all the dead or decayed parts of the bone. In the simplest cases, this is done, 1st, By applying to the *caries* such medicines as tend to dissolve or waste it: 2dly, By applying to the living parts with which it is in contact, such stimulating remedies as may quicken absorption and aid the process of **EXFOLIATION**. In general, both these processes may be assisted by the same means; for instance, by the topical use of the vegetable or mineral acids, or by the actual cautery: but the last is by far the most effectual.

An exfoliation of the carious laminæ of a diseased bone in a horse will sometimes take place in two or three weeks, and in other in-

stances the laminæ remain much longer. It is of course necessary to examine strictly all circumstances attending the case, and to discover, if possible, what cause, general or topical, may have occasioned the caries, that endeavours may be used to remove it, if it still subsist.

When the bone is perceived to separate, if the pus which flows from under it is mild and in due quantity, nothing more is to be done but to remove the pieces of bone as often as they are perceived to be loose. If the opening in the integuments is so small that the matter detained is either absorbed into the circulation, or forms sinuous ulcers, the aperture must be enlarged by caustics or by means of sponge tents. Indeed, if the exfoliation is likely to be tedious, it should be hastened by the actual cautery.

But in general a mild treatment is to be preferred, since the natural powers of the animal are vigorously exercised. In the slighter cases endeavour to excite and continue a degree of inflammation in the adjoining sound part of the diseased bone, so as that it may be the means of separating the mortified part. After all, however, caries of the bone in brute animals is a rare occurrence, except when produced by some accident which sufficiently accounts for it. To a disease of the bone of an opposite kind, namely, **EXOSTOSIS**, they are indeed remarkably subject, but of this we shall treat under its particular name.

**CARINA**; the keel of a boat or ship. In *botany*, it denotes the inferior petal of a papilionaceous corolla; inclosing the stamens and pistil, usually shaped like a boat, hence the name. In *zoology*, the same term is applied to the first rudiments of the spine of a chicken during its incubation.

**CARLINE**, a species of thistle used in medicine. It is the *CARLINA ACAULOSA*; Class, **SYNGENESIA**; Ord. **POLYGAMIA ÆQUALIS**; Gen. 929. Sp. 1. Linn. It is also called *cardopodium*, *crocodilion*, *heracantha*, *ixia chamaleon album acaulos*, *magno flore*, *Carlina humilis*, the **LOW CARLINE THISTLE**. That species with the flower, composed of a number of white petals set round a middle disk, is a native of the mountainous parts of Italy and Germany. The roots have a strong disagreeable smell, and weak bitterish subacid aromatic taste. They are diaphoretic and anthelmintic.

**CARMINATIVES**, a description of aromatic vegetable substances, which, when taken into the stomach, tend to expel wind and abate spasm. Such are aniseeds, carraway seeds, &c. which are often exhibited with other medicines, in the **COLIC**.



CARNÆ COLUMNÆ. See HEART.

CAROTIDS, or CAROTID ARTERIES. (See BLOOD-VESSELS.) From the fore part of the curvature, just before the trachea, the right subclavian and the *carotid* mostly arise in one common trunk, which runs upwards a little way, and then divides. The left *carotid* rises singly, and runs upwards on the side of the trachea. Both these *carotids* run up as high as the side of the larynx, even to the upper part of the thyroid cartilage, before they give off one branch, and there they divide into the external and internal; the latter goes to the inside of the cranium, the pia mater, &c. the former, which is the largest, gives branches to all the external parts of the head.

The external *carotid* is anterior, the internal is posterior; the external situated, in the human subject, nearer the larynx. It is the smallest, runs insensibly outward between the external angle of the lower jaw, and the parotid gland, which it supplies as it passes; afterwards it ascends on the fore-side of the ear, and ends in the temples. It sends off the gutturalis superior, sublingualis maxillaris inferior, maxillaris externa, &c. The internal *carotid*, leaving the general trunk, is, at first, a little incurvated. It is situated a little more backward than the external, and generally runs up, without any ramification, as high as the lower orifice of the great canal of the apophysis petrosa of the os temporis; it enters this orifice, and the cranium, through a notch in the sphenoidal bone; and, except one branch, which goes to the eye, it is wholly spent upon the brain.

CARPUS, that part of the skeleton of a quadruped which answers to the wrist in the human subject. See *wxz* 1, 2, in pl. V. and the description under BONES of the Horse.

CARROT, *daucus*, genus *pentandria digynia*: this well-known vegetable proves an excellent and cheap winter substitute for the horse when the usual summer herbage is inaccessible. Carrots are frequently, and with great advantage, given, mixed with other food, to foals when weaning, and to mares to promote the flow of milk. Previously to their being used, they ought to be well washed and cut into small pieces. They are certainly improper for horses expected to undergo violent exercise.

CARTER, an inferior description of servant employed by the farmer to drive his team and fodder his horses. Too many of these persons are devoid of that humanity towards the objects of their care for which Mr. John Lawrence is so laudable an advocate. Those however who employ persons of this description, ought to consider it a duty, as it is in fact their in-

terest, to prefer such as will treat their cattle well both in the stable and in the field.

CART-HORSES; a breed of horses calculated for draught, usually of the largest and coarsest description. Their Belgic origin, Mr. Lawrence says, is well known. As it is the general opinion, that the saddle-horse ought to be sharp and frigate-built, so they hold that the cart-horse should be round, and (to borrow a phrase from Smollett) as bluff in the bows as a Dutch fly-boat. Rotundity, or the form of carrying their substance in a horizontal position, seems to be the grand characteristic of English draft-horses. They say, this make of the shoulder is the best adapted to drawing along, or moving weights; farther, that it is not so liable to chafe with the collar, as the flat and deep form. Both Bracken and Osner seem disposed, in part, to controvert these positions, probably from their prejudice in favour of bred cattle. That large bred horses would draw, there is no doubt; and it is true, that the superior strength and elasticity of their tendons would enable them to make great exertions; but the article of gross weight has a considerable degree of consequence in this business, and experience seems to be decidedly in favour of nearly the present form and species of cart-horse.

A very erroneous idea has prevailed, concerning cart-horses, that provided they are big, heavy, and clumsy enough, all farther considerations are needless; on the contrary, it is both theoretically and practically true, that great abilities for draft must depend materially upon just proportion; and that four thorough-shaped horses, will draw, with facility, a weight which would puzzle five ordinary ones, although of equal, or even superior size: a truth which they ought to reflect upon, who have a considerable number of those animals to maintain.

A capital cart-horse is not more than sixteen hands high, with a brisk sparkling eye, a light well-shaped head, and short pricked ears, full chest and shoulder, but somewhat forelow; that is to say, having his rump higher than his fore hand; sufficient general length, but by no means leggy; large and swelling fillets, and flat bones; he stands wide all-fours, but widest behind; bends his knee well, and has a brisk and cocking walk.

Mr. Lawrence is aware that many would shake their heads at his commending *length* in a cart-horse; nevertheless nothing is more true, he says, than that, in the account of just proportion, length should not be forgot; and that not only length, but a certain degree of room and freedom of shape is absolutely necessary to enable the horse to make those active

springs, which contribute, more than mere bulk, to the translation of a mass of weight. Short-legged, cloddy horses, as they are styled, are generally too sluggish and slow, subject to grease, and those disorders arising from a thick and fizy blood; but such are preferable to the loose, leggy, and weak-loined—the worst possible shapes of draught-horses.

The breeds of cart-horses most in fashion in our island, at present, are the heavy blacks of the midland counties, the Suffolk punches, and those of Clydesdale in North Britain.

The first are those capital sized, and high-priced horses, made use of by the brewery and distillery in London, and by the farmers of Berkshire and Hampshire, and a few other parts, where their teams form a considerable article of ostentation and parade.

The Suffolk punches, which also extend to Norfolk, are low horses, rather coarse-headed, with indifferent ears, in general chefnut (provincially sorrel), fore-low, with deep and large carcasses, and nimble walkers and trotters. They have ever proved themselves the truest and best drawers in the world, as well as the hardiest and most useful cart and plough horses. Their nimbleness, it should seem, is owing to their length and moderate size; and their immense powers in lifting weight, to the same cause, combined with the low position of the shoulder, which occasions the weight to be acted upon in a just and horizontal direction. Their superiority over all other horses, at drawing dead pulls, is no doubt, in some measure, owing to early training; as in no country is such pride taken, in teaching horses to draw; and it is well known, that a team of Suffolk horses, the signal being given, will all down upon their knees, and leave nothing behind them that is in the power of flesh and blood to draw away. As to draught-cattle, nothing need be done, but give those of Suffolk a fine head and ear, and flat legs, and we are then at the top of it.

But there is another breed of horses, in Suffolk and Norfolk (how they came there is somewhat difficult to ascertain), well fitted both for the saddle and draft. A cart-horse of this description, bating a little coarseness of the head, was perhaps as fit to get hacks and hunters, from proper mares, as the best bred horse alive. A Norfolk farmer, about forty years ago, had a peculiar sort, which he styled his Brazil breed. This person would sometimes unharness one of his plough horses, ride him to a neighbouring fair, and after winning a race with him, ride him home again in triumph.

Of the Clydesdale horses, Mr. Culley's description is probably as good and useful a

draught-horse as any we are possessed of; larger than the Suffolk punches, being from fifteen to sixteen and half hands high, strong, hardy, and remarkably true pullers, a restive horse being rarely found amongst them. In shape, in general plain made about the head, sides, and hind-legs; mostly grey or brown, said to have been produced from common Scotch mares and Flanders horses, a hundred years ago.

But the size, rather than the sort, of our cart-horses, has become the chief object of consideration, since it has been the custom to breed them up to a ton weight, and seventeen and even eighteen hands high.

Mr. Lawrence asserts that these over-sized horses are not able to do more work than those of moderate size and true proportion: for in growing them up to this vast bulk, you gain only in mass and weight to be carried, but nothing in the size and substance of the sinews and muscles, the cords, levers, and pullies, which are destined to move their own as well as any extraneous load. By this reasoning, it should seem, that the out-sized are unable to perform even so much work as the middling; and another argument against them, equally just, is, that they must, in general, consume a proportional larger quantity of food.

In Mr. Culley's book on this subject, it is recommended to mix even a little racing blood with the cart-stock. The author also describes the wonderful exertions, in carting-business upon the road, of the Cleveland bays, a sort of coach-horses. Although bred horses are, of all others, the most sluggish, yet it is well known, that a mixture of their blood gives spirit and activity to other racers. Although these half-bred cart-horses may perform well in light work, and upon hard roads, they may not be so well calculated for stiff clays and heavy sands.

There is also a very material idea which Mr. Lawrence wishes earnestly to impress on the minds of all breeders of draught-cattle. It is, that in breaking the colt, they always teach them to back readily, and to go quietly in the shafts. Every man who has had much to do with cart-horses, well knows the abuse and the miseries they suffer, when they have not been taught to back; and also the trouble there is, in a press of business, where one horse will not go before or behind his fellow; whereas draught-horses should be all so far accustomed to change, as, at least, to make a decent shift in any place.

There are horses, whether from some latent and internal weakness, or whatever occult cause, which never can be forced, by the utmost severity, to strain at dead pulls, and yet in all ordinary business, and where the weight follows



freely, and is in obvious proportion to their powers, they may be as good, and as serviceable horses, as any in the world.

**CARTILAGO**, a cartilage; a smooth, solid, diaphanous, elastic, insensible, inorganic substance. In the fresh subject it appears uniform, and without any visible fibres; when cut in any direction, its surface appears smooth like wax or glue. On a *cartilage* there is no periosteum, but its place is supplied by the perichondrium.

The *cartilages* have a natural elasticity, by which if they are forced from their natural figure or situation, they return to it of themselves, as soon as that force is removed. They are chiefly in those places where a small and easy motion is required, as in the ears, nose, larynx, trachea, and sternum; and their natural elasticity serves instead of antagonist muscles.—They cover also all the ends of the bones, which are joined together for motion, because they are smoother than the bones. They are without sense; and by being softer than the bones, the attrition which is made by the motion of the joints, is the more easily guarded against.

*Cartilago Ensisformis*, and also called *Xiphoides*, from *ἔσος*, *ensis*, a sword, and *ειδής*, *forma*, *shape*; is the tip or extremity of the sternum, which is broad at its upper end, and narrower towards the extremity, where it is sometimes a little forked.

*Cartilago Innominata*, so called by Galen, is the same as the moderns call *Annularis*, or *Cricoides*; which is the second cartilage of the larynx, and, according to Bartholine, is the basis of all the other.

*Cartilago Scutiformis*, so called from its resemblance to a helmet in shape, is that cartilage whose prominence is discernible externally in the throat; and by some called *Pomum Adami*, from a conceit of its being left as a mark of the divine wrath upon Adam's transgression.

**CARUI** (from *Carca*, the country from whence they were brought). See **CARUM**.

**CARUM**, CARAWAY. It is the *carum carvior*, *carum pratense*, *foliis pinnatifidis planis, floribus albis, umbellatis inaequalibus confertis*. Cl. Pentandria; Ord. Digynia; Linn. Gen. Plant. 365.

Botanists enumerate three species. It is an umbelliferous plant, with striated branched stalks two or three feet high, and finally divided; the leaves are set in pairs along a channelled rib, every two of which ribs cross one another at their origin on the stalk: the seeds are small, of a brownish or blackish colour, somewhat bent, striated, flat on one side, and convex on the other. It is a native of the northern climes,

cultivated in gardens with us, but by chance found wild, and is a biennial plant.

The seeds are warm and carminative; have an aromatic smell, and a warm penetrating taste; and are given to cattle in powder, or with other ingredients in balls.

**CARUNCLE** (a diminutive from *caro*, *flesh*); is either preternatural, as those little excrescences in the urinary and other passages; or natural, as the

**CARUNCULÆ MYRTIFORMES**, from their resemblance of Myrtle berries, so called; as also *Glandulæ Myrtiformes*. They are made by the rupture of the hymen in female animals, which, contracting in several places, forms those *caruncles* or glands.

*Caruncula Lachrymales*, *Puncta Lachrymalia*, and *Glandulæ Lachrymales*: all concur in the same offices, and will hardly admit of a separate description; thus distinguished from *lachrymæ*, tears. See **EYE**. On the back-side of the adnata tunica of the eye, upon the upper part of the globe, is the *glandula lachrymalis*, pretty large, divided into several lobes, each of which sends out an excretory channel, which opens in the fore-side of this membrane, where it covers the upper lid. This gland separates the matter of the tears, which, by the continual motion of this lid, moisten the cornea, which otherwise would dry and wrinkle by the continual action of the external air. The edge of the eye-lid being of an equal convexity with the ball of the eye, which they touch, as the tears fall off from the cornea, they are stopped by the edge of the under eye-lid, along which they run till they fall into two small holes in the great canthus, one in each lid. These holes are called *Puncta Lachrymalia*: and these lead to a small membranous bag, which is situated in this corner upon the os lachrymale: from the bottom of which goes a small pipe, which pierces this bone into the nose, and, opens under the upper lamina of the os spongiosum. It moistens the inner membrane of the nostrils by the humour of the *lachrymal glands*, which runs from off the globe into them. Sometimes the acrimony of this humour causeth sneezing, which may be hindered by pressing the angle of the eye to stop its flowing. Now, between these two puncta there is a *caruncle* which serves to keep them open when the eyes are shut, and this by some is ignorantly called the *Glandula Lachrymalis*.

*Carunculæ Papillares*, are those little protuberances on the inside of the pelvis of the kidneys, made by the extremities of the tubes, which bring the serum from the glands in the exterior parts to the pelvis.

**CARUS**, insensibility and sleepiness, with quiet respiration. It sometimes signifies a loss

of sense and voluntary motion, respiration remaining uninjured; the same authors call the disease an *Apoplexy*, if to this is added an oppressed respiration to a considerable degree, or so as to snort or snore. Sometimes, it signifies a profound sleep, but without fever.

**CAROPHYLLI, CLOVES.** They are the unripe fruit, or perhaps the cups of the unopened flowers, of a bay-like tree, which grows in the Molucca islands. The clove-tree is a genus in Linnæus's botany. There is but one species, viz. the *Caryophyllus aromaticus*. The college have retained this spice, and its essential oil, in their Pharmacopœia. The clove enters the Electuarius e Scammonio; the Confectio Aromatica; the Cataplasma Cumini, &c. It is too expensive for veterinary uses.

**CASCARILLA**, a diminutive from *Cascara*, the Spanish word for a bark or shell. The Spaniards apply the word *Cascarilla* to the Peruvian bark, as we apply the word bark to signify that sort of bark alone. The tree which affords it has been said to be Linnæus's *Croton Cascarilla*; and by others, *Clusia Eleuteria*. The college have retained the Cascarilla, or Eleuteria, in their Pharmacopœia.

**CASSADA**, a plant which grows in the warmer parts of the western world. Its root is the part used; it is poisonous, and called *Yuca*; when it is prepared into flour, it is called *Cassavi*. Though the root is a strong poison, it is prepared into wholesome bread; for, by boiling, all the poisonous quality is dissipated.

**CASTING**, a term used for the throwing down and overpowering a horse, so as conveniently and safely to perform any painful operation upon him. The way to do this is to bring him upon some even ground that is smooth and soft, or into a barn, upon soft straw; then take a long rope, double it, and cast a knot a yard from the bow; put the bow about his neck, and the double rope betwixt his fore-legs, about his hinder pasterns, and under his fetlocks; when you have done this, slip the ends of the rope underneath the bow of his neck, and draw them quick, and they will overthrow him; then make the ends fast, and hold down his head, under which you must always be sure to have plenty of straw, to prevent his beating it against the ground.

**CASTOR**, a substance taken from the beaver, an amphibious quadruped, inhabiting some parts of Prussia, Poland, Russia, and Germany; but in greater numbers in Canada. In the inguinal region of this animal are found four bags of an oval shape, a large and a small one on each side; in the two large ones is contained a

softish greyish yellow or light-brown substance, which, in a warm dry air, grows hard and brittle, and of a darker and browner colour: this is called *Castor*, and is what is used in medicine. The two smaller bags are of little or no value. The college have retained Russian castor in their Pharmacopœia, though it is known to possess little power as a medicine. The instances of its exhibition in veterinary practice are rare.

**CASTOR OIL**, a mild purgative expressed oil, procured from the berries of the *Ricinus*. See *RICINUS*.

**CASTRATION**, the operation by which the testicles of an animal are removed, so as to incapacitate it for propagating its species. Performed on the male, it is called **GELDING**; on the female, **SPAYING**. Mr. John Lawrence considers the practice of castrating horses, so universal in this country, to be founded upon the most rational experience of its use and propriety; and, viewing it even in the light of humanity, he thinks it is preferable to employing them in their un mutilated state. He says,

"We do not find that inferiority in geldings for any services which theoretical reasoning upon the matter might lead us to suppose. The difference between the sexes, I judge to be, that mares are neither able to carry or draw such heavy weights as horses or geldings; and that horses have the superiority in those two respects.

"The chief disadvantage in mares is their faintness and loss of appetite during their horsing time, continuing perhaps two or three days, at several intervals in the spring; but this is, in truth, of such small importance, that thousands of people who work mares perceive nothing at all of the matter; and this trifling inconvenience is infinitely overbalanced by the consideration, that, if an accident should happen to render a mare totally unfit for labour, she may still produce a substitute."

Mr. Marshall has recommended spaying mares very strongly, which he supposes a new idea; but Mr. Lawrence asserts, that he has seen an advertisement, sixty or seventy years old, of "grafs for *spayed* mares." There can be no doubt but mares may be cut with the greatest safety, as heifers are; but by no means with equal, or indeed any probable, advantage.

Castration may be attempted at any age on the horse. It is very simple in the performance, and we daily see it done with all needful dexterity by persons almost destitute of veterinary science. Mr. John Lawrence directs us to lay open the scrotum, tie the cords of the testicles successively with a strong waxed thread, and then separate the testicle. The operation



performed in the common way is the following: If the subject be a colt or horse, after having cast him upon some straw in a proper place, take the testicles between your foremost finger and your great finger, then slit the scrotum, and press the testes out. When that is done, with a pair of small nippers made for the purpose, press the chords of the testicles sufficiently hard, that there may be no flux of blood; then, with a thin drawing cauterizing iron, made red hot, separate the testicles successively, and dress the part with any simple ointment spread upon tow. The use of stimulating dressings of any kind, such as rubbing the wounded part with salt, is not only a cruel, but a hurtful, practice. In some instances great swelling and inflammation supervene; and, in that case, warm fomentations and poultices become necessary; but, in most cases, nature effects the cure without our assistance.

CAT, a domestic animal, of known utility, but of whose diseases we have as yet scarcely any knowledge. Besides the inflammatory affections to which cats are obnoxious in common with other quadrupeds, they are subject to intestinal and glandular obstructions; to epilepsy; to the tape-worm; to herniæ, as will be seen hereafter; and to peculiar epidemic diseases.

Many instances of these are upon record, and to them the following may not undeservedly be added:—A large male cat, having for many days been affected with a painful constipation of the bowels, at last died; and, on being opened, the disease was found to have been occasioned by a quantity of soft hair (supposed that of a rat which he had eaten), matted together into a solid mass, incapable of being protruded by the peristaltic motion. The sufferings of the poor animal were extreme, but were somewhat alleviated by emollient clysters which were injected, though these had no effect in disengaging the obstructing substance.

Another cat, after occasional signs of indisposition, voided a narrow tape-worm, of about nine inches in length, from the stomach. The worm was entire, its head and eyes being very distinguishable; and it continued, for some minutes, to move about, in a vessel of water, into which, when discovered, it had been put.

A female cat died in consequence of glandular obstruction, as was supposed, from having stolen away, and eaten, a piece of the skin of a horse affected with the FARCY. This portion of skin was studded with the buds or excrescences usual in that disease, and had been set apart for examination by a medical gentleman. The parotid glands of the cat were remarkably enlarged.

Mr. Spry, a surgeon in London, has procured to be published, in the Medical and Physical Journal, a singular account of an internal hernia in a cat. The drawing represents the heart on the right side; the pericardium ruptured, and the heart forced from its natural situation by the stomach. The stomach occupied the major part of the thorax; and the lungs were forced up to the superior part of the chest, and compressed in every direction by it. A mass of omentum is next seen, with the pancreas and spleen passing, along with the duodenum, through the tendinous opening of the diaphragm.

Mr. Spry says, the animal was observed to be in very great pain, and was seized suddenly, without having suffered any previous injury from external violence. It cried frequently, with a peculiar voice not to be described; and during respiration (which was extremely difficult), it made a noise almost similar to that which a child makes who labours under cyanache trachealis. Soon after its first seizure, it vomited very much; and, upon attempting to put a little liquid into its mouth, the animal's tortures seemed to be very much increased. The time from its seizure to its death was about two hours and a half, or three hours.

A Memoir on the Epidemic which raged in Italy among Cats, by Dr. Valeriano Luigi Brera, Professor of Medicine in Pavia, contains a series of observations well deserving the attention of those who wish to investigate, with precision, the epidemics which have often been noticed among them in this country.

The author gives the following accurate description of the malady, as observed by him, at Pavia.

"The cat, when first attacked, becomes weak, heavy, and unquiet; it avoids the sight of its master, conceals itself, refuses to eat or to drink, and is no longer attracted by the smell of valerian, marjoram, &c. of which it is generally so excessively fond. As the malady increases, the cat with difficulty supports itself on its paws; its hair becomes erect, its tail droops, its eyes lose their lustre, and the abdomen becomes disordered; it makes vain efforts to vomit, and at length sinks under the disease."

From these symptoms Dr. Brera conjectures, that the malady is a nervous fever, which, although dangerous, is nevertheless curable. Dissection afforded no morbid appearances, but some livid spots on the bladder, and the gall-bladder dilated, and filled with very black bile, the ordinary effect of nervous complaints; nor could he find any trace of worms, from which

he concludes, that the disease is derived from the atmosphere. Valerian, marjoram, &c. diffused in wine, and alum, garlic, &c. in spirits, were found extremely beneficial in the cure of the disease. As preventive means, he recommends "the killing of the animals infected, and burying them in deep pits; the purification of the air in the apartments where any have died; the administration of a more than ordinary quantity of nutritive food, and the exposing them to fumigations of vinegar."

This memoir, upon the whole, contains much valuable information; and the purring tribe, which has already found a Homer in Mr. Desherbier, has now an Esculapius in Dr. Brera.

**CATAPLASM**, a soft external application, popularly named Poullice. These are softer than plasters or ointments. They are generally formed of some vegetable substances, and applied of such a consistence as neither to adhere nor run. They are also particularly useful when the intention is to be effected by the perpetuity of heat or cold, which they retain longer than any other kind of composition. See **POULTICE**.

**CATARACT** (from *καταρσσω*, to mingle together, or put out of order, or to confound), a disease of the eye, in which, from an opacity in the crystalline humour, the rays of light cannot pass to the retina, and thus a species of blindness is produced. (See **EYE**.) It begins with a suffusion of the eye, when little clouds, motes, and flies, seem to float about in the air; but, when confirmed, the pupil of the eye is either wholly, or in part, become opaque, so that light has little or no admittance.

**CATARRH**, an inflammation of the mucous membrane of the nose, throat, or lungs; popularly known as affecting man and other animals by the name of a **COLD**. The symptoms are too well known to require a particular description. On their first attack bleeding is the most effectual remedy, and will frequently save much trouble by removing the disease in a short time. Mr. White recommends a dose of febrifuge powder to be given every morning and evening until the symptoms abate, and then every second or third day only:

Take nitre in powder one ounce;

Camphor,

Tartarised antimony, of each two drachms. Mix.

Clysters are also very useful at the beginning of the disease; should, indeed, the horses be costive at any period of it, these may be em-

ployed with advantage: the head, as well as the body, should be clothed, a large quantity of litter allowed, and hand-rubbing to the legs should by no means be neglected. Should there be a discharge from the nose, it is to be encouraged by steaming the head, as it is termed, that is, by putting a hot mash into the manger, and tying his head up to the rack, so that he may inhale the vapour. If at the same time the glands of the throat swell, and appear to be inflamed, the disease will probably prove to be the strangles, in which bleeding is generally improper; though, even in this case, should there be any symptom of fever, the operation must not be omitted. A cold is sometimes accompanied with an inflammation and soreness of the throat, occasioning a difficulty in swallowing: in this case a blister is to be applied to the throat; and if the glands under the ears are swollen, let some discutient embrocation be applied to them, unless at the same time they feel unusually hot, and appear to be going on to suppuration, in which case a poultice is most effectual. When a cold is accompanied with an inflammation of the eyes, a rowel under the jaw is useful. A cold is sometimes attended with fever, and must be treated accordingly: (see **FEVER**). When the horse loses his appetite, and the flanks work quicker than usual, an inflammation of the lungs is indicated: (see **INFLAMMATION OF THE LUNGS**). It frequently happens that a troublesome cough remains after the other symptoms of a cold have been removed: in such cases the pectoral ball (see **BALL**) will be found useful. In violent colds it may be necessary to bleed more than once; and in several cases, where the symptoms were of longer continuance than usual, Mr. White gives the following mercurial ball every morning until it produce purging, with considerable advantage. Obstinate colds are said to degenerate sometimes into glanders. It is not clear how far this opinion may be true: it may be adviseable, however, whenever a discharge from the nose continues longer than is usual in colds, more particularly if it comes only from one nostril, and if the glands under the jaws are swollen and indurated, to separate the horse from such as are found, as it may prove to be the glanders.

#### MERCURIAL BALL.

Take of calomel, half a drachm;

Tartarised antimony, two drachms;

Powdered caraway-seeds, half an ounce.

Syrup, enough to make the ball.

**CATECHU**, an inspissated vegetable juice,



heretofore named *TERRA JAPONICA*, imported from the East Indies. It is dry and pulverable, outwardly of a reddish colour, inwardly of a shining dark brown or red black. It is powerfully astringent.

**CATHARTICS** (*καθαρτικά*, from *καθαίρω*, to purge). This word is generally used as expressive of purging medicines only; but it also implies emetics. The peristaltic motion of the bowels in all animals is such as continually helps on their contents from the pylorus towards the rectum. Now, every irritation either quickens that motion in its natural order, or occasions some little inversions of it. In both, what but slightly adheres to the coats or inner membranes will be loosened and shook off, and carried forward with their contents; and they will also be more agitated, and thus rendered more fluid. By this only it is manifest how a *cathartic* hastens and increases the discharges by stool; but the same manner of operation also carries its effects much farther, in proportion to the force of the stimulus: for, where it is great, all the appendages of the bowels, and even all the viscera in the abdomen, will, by a consent of parts, be pulled or twitched, so as to affect their respective juices in the same manner as the intestines themselves do their contents. The consequence of which must be, that a great deal will be drained back into the intestines, and made a part of what they discharge. And when we consider the vast number of glands in the intestines, with the outlets of those viscera opening thereinto, and particularly of the liver and pancreas, it will be no wonder that vast quantities may be carried off by one purge.

Cathartic remedies are of various kinds, and may be administered in different forms. In farriery, that of a ball is most convenient. See **BALL**, and **PURGE**.

**CATHARTIC SALTS**, such saline preparations as possess a purgative quality. Glauber's salt (the *vitriolated magnesia* of the New Dispensatory), Epsom salt, and even common salt, are of this number; though the experiments made at the Veterinary College have led to some doubts as to their power of acting on the intestines of the horse.

**CATHETER**, a hollow tube of metal, or elastic gum, curved in such a direction as is most favourable to its introduction into the bladder of an animal, whose urine it is necessary to evacuate by artificial means. Mares are capable of this operation; but, such is its course, that we cannot introduce a catheter into the bladder of the horse through the urethra. A piece of whalebone, however, may

be thrust up the urethra, above the first curve, and on this an incision may be made to admit of the introduction of the catheter: or, indeed, a flat trocar may be forced into the bladder, near the os pubis, without touching the urethra. This operation is very likely to succeed, as will the former also, even in the operation for the stone in the bladder.

**CATHOLICON**, a general or universal medicine, much sought after in the days of alchemy, and supposed to be capable of removing diseases of every kind. It was sometimes termed *DIACATHOLICON*, an universal purger of morbid humours.

**CATTLE**, a general name for those quadrupeds which are destined either to till the ground or to be the food of man. Cattle are distinguished into *horned* or *black* cattle, which comprehends horses, oxen, bulls, cows, and their young; and *small* cattle, under which are ranked rams, ewes, goats, lambs, &c.

**Horned CATTLE**. These are not subject to that variety of diseases, and of untoward accidents, which necessarily attends the superior luxury, and more frequent and feverish labours, of the horse; hence probably those have not shared the equal attention of our modern veterinarians: but since medicine is medicine still, to whatever creature it may be dispensed, whether to horse or cow, to quadruped or biped, the ineffable burlesque of entrusting the prescription of it to farriers and cow-leaches will no doubt soon be laughed off the stage.

In his veterinary work, Mr. John Lawrence has collected into one view the little that is known of the diseases of cattle in general, and has treated of them concisely under their popular names. As what he has collected is really the sum-total of what authors have promulgated on the subject to the present day, we cannot do better than follow him in his observations, and recite those cases which, having occurred in his own practice, deserve to be more particularly noticed.

"In the ancient writers," says he, "scarce any thing is to be found applicable to modern occasions, or the enlightened practice of modern times. The same may be said of the books of our modern cow-doctors in general (those lame and imperfect copyists of the ancients), which exhibit an uncouth and barbarous nomenclature of diseases, a vague and unintelligible pathology, with a medicinal catalogue and method of treatment perfectly congenial. Divers Italian physicians, both of the last and present century, have treated on the diseases of cattle; but, from what I have read

of their works, I think I may venture to assert, that little to any beneficial purpose is to be drawn from those sources. The various writers on black cattle and sheep have been collated by Haller, and in the *Giournal di Letterati of Italy*. Dr. Hales's *Vegetable Statics* may be consulted, and Dr. Layard: for the rest, the practitioner must be guided by the analogy which holds in the diseases of the larger animals, and his own discriminating observations.

"Much the same methods of administration, whether in regard to medicine or the common operations, are in use among horned cattle as among horses: the same *materia medica* must be naturally common to both; and all those coarse or insignificant articles with which cow-drenches are stuffed, ought to be totally rejected, as of equivocal use, if not of probable bad consequence. The doses for neat cattle seem not to have been hitherto properly ascertained and apportioned; but the little experience I have had leads me to suppose, that they require a less quantity of medicine in a dose than horses by about *one third* in general. Why balls are not given them as commonly as to horses, I am ignorant.

"The medical aids generally required for cattle are of the relaxant and deobstruent species, with the occasional demand of cordials; agglutinants have little place here, the animals possessing the inherent quality of being fatted with their proper food. The attempt to restore animals in a cachochymic or consumptive state, by the help of medicine, would be most unpromising; and the first end of such will, on calculation, be always found the best. When unthrifty animals have a fine silken and glossy coat, the true *prognosis* is, that their *viscera* are unsound; and I have generally observed the liver of them to be of bad colour and consistence, and the lungs adhering to the *pleura*, or tegument of the chest: with a rough and staring coat, their ill habit may probably arise from internal obstruction only, which alterants or purgatives may quickly remove."

1. *The STURDY, or TURNING-EVIL.* See STAGGERS.

2. *FOUL in the FOOT*, arises from want of cleanliness. Prevent by constant attention. For cure, cleanse with bran and water boiled, and lather of black soap. Use Bracken's Fistula-water.

3. *GARGET in the MAW*, from swallowing crabs, acorns, &c. See GARGET.

4. *SCOURING in Cows.* This is common; and Mr. Lawrence has seen it continue so long for want of care, that the beast has been irre-

coverable. Dr. Downing's prescriptions in this case, of turpentine, pomegranate-powder, pipe-clay, oak-bark, verjuice, &c. he thinks very dangerous, as likely to lock up the offending matter in the intestines. "This *diarrhœa*," says he, "arises from various causes, to wit, change of diet, the solution of a cold, particularly after calving, or in travelling across the country; lastly, it may be a symptom of ROT, either from bad keep, or constitutional: this I think I have sometimes discovered by the hair pulling off, as from a glandered horse. Take it in time, and allow comfortable mashes, with warm, dry, and generous keep." This disease in horses is called the ROT, in the north of England.

5. *The HOOSE, or CHRONIC COUGH.* This in cows is often incurable. It usually proceeds from cold taken in calving, and cold and wet winter lying. For palliation, or cure, Mr. Lawrence advises a similar plan of treatment to that employed for broken wind in horses.

6. *Loss of the CUD, or QUID.* On reading the strange account of this indisposition in the old writers, one is led to suppose that the beast, through carelessness, drops something from its mouth, like a quid of tobacco, and lies down to mourn the loss of it: their remedies were equally satisfactory. You are directed to take yeast, clay, pifs, salt, and the slaver of another beast, with which a new quid, or ball, is to be made for the patient. Mr. Lawrence says,

"The real cause and remedy for this disorder are as follow: Cattle which ruminate, or return their food for mastication, are provided by nature with four stomachs; of these the *rumen*, or cud-bag, which receives the provender, is constructed with certain fleshy fibres, or contracting muscles, which, by drawing and pursing it up, enable it to throw into the gullet and mouth, the crude aliment, to be chewed over again. The defect exists in the laxity and weakness of those contracting muscles, and their consequent inability to expel the food for the purpose of rumination. This weakness may arise from various causes. The intention of cure is to brace the fibres and strengthen the system. Begin with warm mashes of bran and ground oats. Give from four to six drachms, according to the size and strength of the beast, of the finest aloes and rhubarb, equal quantities; salt of tartar, half an ounce; aniseeds powdered, one ounce; either in gruel or beer, warm. Good sweet hay, small quantities at a time. In two or three days, bark and gentian, half an ounce each; ground ginger, a tea-spoonful, in warm ale, moderately sweetened, twice



a-day, to be continued a while; or, occasionally, a decoction of horehound, camomile, and *carduus*, sweetened. The very rough astringents, such as verjuice, oil of vitriol, alum, &c. used by cow-leaches in this case, are highly improper, and sometimes have fatal effects. Mr. Clark relates an instance of a horse being killed by a draught of vinegar."

7. RED WATER, or BLOODY URINE, or FOUL WATER, in Cows. Give opium, sixty grains, with or without as much rust of iron; or thirty grains of vitriolated iron; twice a-day, in a ball mixed with flour and water, and dissolved in warm ale. Corn is proper twice a-day, and covering at night, if cold weather. *Zoonomia*, vol. ii. p. 69.

8. GORGED or HOVEN,—i. e. swelled with over-feeding, either with green or dry food. In this case, bleed from three pints to four, and drive the animal about moderately. If the case be slight, either of the following drenches may succeed, without the operation of paunching.

Take of Glauber or Epsom salts, two ounces;  
Syrup of buckthorn, one ounce;  
Nitre, one ounce;  
Oil, half a pint;  
Peppermint-water, a quarter of a pint;  
Ground ginger, *q. s.*

Give in three pints of warm whey or gruel.

Or we may give Dr. Whytt's medicine, of Edinburgh, by which he saved eighteen hoven cows out of twenty, *viz.* Gin, one pint, in the same quantity of water. When the case appears dangerous, and the beast cannot stand, lose no time, but perform the simple and easy operation of paunching, *viz.* make an incision with a sharp knife on the near side, about an inch and a quarter long, between the rib and hip-bone, three inches below the bones of the loin. In case of pregnancy, however, great care must be taken, and other means used. The wound, in case of paunching, may afterwards be healed with a common dressing of salve. Mr. Lawrence asserts, that a farrier, in Sussex, took from the body of a cow nearly two bushels of indigested hay. Some farmers insert a tube into the wound, to let out the imprisoned air; and Professor Munro, of Edinburgh, invented a flexible one, to be passed through the mouth into the stomach of either an ox or sheep. These are to be had of Mac Dougale, No. 15, Great Windmill-street, London. This tube may be left in the stomach of the animal any length of time, being no hindrance to

breathing; or any medicine may be injected through it. It is held to be a safer method than incision by Dr. Munro, and probably is less painful to the animal.

9. *Epidemic Diseases in Cattle*, called by the different names of PEST, MURRAIN, and PLAGUE.—Dr. Layard's is reckoned the best, or rather it is the only, work on this subject; published in 1757. He defines the distemper to be a pestilential fever *sui generis*, peculiar to animals with horns, but uninfected to all others. Leonard Masgal, however, relates a circumstance which occurred in his days, of an infected hide, carried on horseback to a tanner, which killed both man and horse, tanner and all. Although such writers are little to be depended upon, one would suppose this too plain a case to be mistaken.

The following is extracted from *Zoonomia*, vol. ii. p. 249. "The *Pestis Vaccina*, or disorder among the cows, seems to have been a contagious fever, with great arterial debility; as in some of them, in the latter stage of the disease, an *emphysema* could often be felt in some parts, which evinced a considerable progress of gangrene beneath the skin. In the sensitive irritated fevers of these animals, I suppose, about sixty grains of opium, with two ounces of extract of oak-bark, every six hours, would supply them with an efficacious medicine, to which might be added thirty grains of vitriol of iron, if any tendency to bloody urine exist. To prevent the infection from spreading, an order from government, forbidding the removal of any cattle found within five miles of the place supposed to be infected, for a few days, until the ascertainment of the existence of the contagion by a medical committee, would be advisable: that being ascertained, all the cattle within five miles of the place should be immediately slaughtered, and consumed within the circumscribed district, and their hides put into lime-water before proper inspectors."

On the subject of MILCH Cows and CALVES, Mr. Lawrence says, his small dairy, for seven or eight years, varied occasionally between two and ten cows. He presents his readers with the following useful hints; in the *obstetric* part particularly taking Dr. Downing for his guide.

10. *Swelled Udder*.—Some cows are liable to have the udder exceedingly swelled and inflamed, a few days before calving. Milk the cow twice a-day, and bathe the parts thoroughly with camphorated spirits. It is an error to suppose milking a cow before calving is injurious.

11. *Cbafing*.—Cows which are *cat-hammed*,

and go close behind, are apt to chafe the udder and thighs; so as to become raw and even ulcerated in those parts, and to emit a very disagreeable stench. Mr. Lawrence directs us to wash twice a-day with warm soap-suds, and bathe the parts with lead-water, or with brandy alone.

12. *Chapped Teats*.—After milking, use the means ordered for chafing. Avoid all greasy applications, if possible; if not, use lard, with a little ceruse mixed in it. In seven or eight days, the teats will be healed, and cleanliness may preserve them so.

Cows are also liable to another disease, of which the ingenuity of man has availed himself as a most important prophylactic. The disease alluded to is the Cow-pox, of which see an account under that article.

The diseases of *small cattle* are treated of under their several heads.

**DRAUGHT CATTLE.** See **CART-HORSE**. Some of the best writers on husbandry are strenuous in recommending *oxen* (of a suitable breed) as draught-cattle; and the trials that have been made have greatly overcome the prejudices of ignorant farmers against their use in various parts of Britain. Mr. John Lawrence states the following particulars, related to him by a Herefordshire farmer, a man of veracity and long experience.

“An ox-team ploughs an acre in eight hours, performing the day's work with full as much ease and dispatch as a team of horses. The oxen are exceedingly handy, and may be driven with a heavy load to a hair's breadth. My informant is in the habit of carting lime from the distance of seventeen miles, both with ox and horse teams, and the former usually beat the horses by about an hour in the journey, taking the carts faster up the hills. Oxen, by trial, have walked more miles in a given time than cart-horses. They are fed (the oxen I mean) with hay and chaff, and but little corn.”

**CAUDA**, in botany, the tail of a leaf. It is the production of the middle rib, and connects the leaf with the stalk, after the manner of a pedicle: when the middle rib hath an appendix of the leaf running along it, it is often called a winged leaf. Martin says it is a process, or thread, terminating a seed, and facilitating its operation. This term was used formerly for the narrow base of a petal, in a poly-petalous corolla, which Linnæus calls *unguis*, the claw.

**CAUDA EQUINA**, in anatomy. In some animals, as in man, the medulla spinalis ends

about the first or second lumbar vertebra, and there forms itself into many branches, which receive all together the name *cauda equina*, from being like a horse's tail. From the loins of a quadruped downwards the holes in the vertebræ are somewhat lower than the origin of the nerves that pass through them; hence it is of importance, when any disorder arises from an injury of any of the nerves below the first and second lumbar vertebræ, to advert to this circumstance; and as at the first or second vertebra of the loins the *cauda equina* begins, so, in tracing the source of all the nerves below these parts, their origin is together there.

**CAUDEX** (from *cado*, to cut down). Some derive it *quasi cauda arboris*, as being the tail of the plant. The trunk of a tree. The trunk, stock, or stem, is that part of any plant which lies betwixt the root and the branches. In herbs and undershrubs this part is called *caulis*, *thyrsus*, *scapus*, *calmus*, or *calamus*; according to Linnæus, when a seed germinates, the *caudex descendens* terminates in roots, the *ascendens* in branches and leaves.

**CAUKER**, a term employed to express the bending or *turning up* of the heels of the shoes of horses, and meant to prevent the animal from slipping. This method, though formerly universally in practice, is now generally limited to the outside heel of the shoes of the hind feet. Caukers have been considered as injuring the natural motion, elasticity, and expansion, of the foot, and of destroying the healthy use of the frog and the bars; and also as having frequently been the cause of quitters, and other inconveniences, from horses with shoes of this description being particularly liable to wound the coronet and cartilages.

**CAUL**, a popular name signifying the omentum of an animal. It is used in this sense by Gibson and his contemporaries.

**CAULIS** (*καυλος*), the stalk or stem. The stalk of a tree is called its trunk. Linnaus defines it to be the proper trunk of the herb, which elevates the leaves and fructification.

**CAULIS PROCUMBENS**, a procumbent or trailing stalk, is that which lies on the ground, and propagates itself by emitting roots, as the ivy and strawberry.

**CAULIS SCANDENS**, a climbing stalk, is that which climbs by the help of tendrils, as the vines and briony, &c.

**CAULIS VOLUBILIS**, a twining stalk, is that which twists about any prop, without the help of tendrils, as the hop, kidney-bean, &c.

**CAUSTICS** (*Caustica*, *καυστικα*, from *καω*,



*uro, to burn*) are such things as by their violent activity destroy the texture of the part to which they are applied. These eat away, as we commonly express it, or burn the flesh into an eschar, and this in a little time falls quite off, and leaves a vacuity in the part. Caustics are of use generally in abscesses and imposthumations, to eat through the integuments, and give vent to the matter; also to make issues in parts where cutting is difficult or inconvenient. The actual cautery, however, is more commonly used in veterinary practice. See CAUTERY.

CAUSTIC LIXIVIUM, a liquid caustic, of which the following is the mode of preparation:

Take of fresh burnt quicklime, eight ounces;  
Purified fixed vegetable alkali, six ounces.

Throw the quicklime with twenty ounces of warm water into an iron or earthen vessel. When the extinction and ebullition of the lime is completely finished, immediately add the salt; these being well mixed, let the vessel be kept shut till it cools; shake up the cool matter, and pour out the whole into a glass funnel, whose throat must be stopped with clean rag. Let the upper part of the funnel be covered close, whilst the tube of it is inserted into another glass vessel, that the lixivium may gradually drop into the vessel placed below. As soon as it shall cease to drop, pour into the funnel some ounces of water, but cautiously, that the water may swim above the matter; the lixivated water will again begin to drop, and thus must the affusion of water be repeated, till three pounds have dropped, which will take up two or three days; then shake the superior with the inferior portions of the liquor together, mix and keep it in a vessel well stopped.

This lixivium properly prepared has neither smell nor colour, neither will it effervesce but perhaps very slightly with acids. Colour and smell indicate the salt has not been sufficiently calcined; the effervescence, that the lime has not been good.

The reason of the great nicety required in the operation is very obviously to prevent absorption of fixed air from the atmosphere; for the mildness or the causticity of alkalies, whether fixed or volatile, depends upon fixed air; the first depends upon the union with, the last upon the deprivation of, it: thus, quicklime having a greater affinity with fixed air than alkali, the fixed air in this process quits the alkaline salt, and unites with the quicklime, rendering the

salt caustic, and the lime mild and insoluble in water. By some Dr. Black's method of preparing this caustic fluid, is considered the most eligible.

This is exhibited internally in some diseases of the human subject: how far it may be suitable in the diseases of brutes remains to be ascertained by experiment.

CAUTERY, *Canterium*, derived from *καυτηρ*, or *καυτηριον*, from *καω*, *I burn*. It denotes the searing, dividing, or corroding, by various means, different parts of the animal frame. This operation may be effected by chemical preparations, or by heated iron: the latter method is termed the actual cautery. Before the introduction of ligatures, for the prevention of arterial hæmorrhage, the ancients' only dependence was on the actual cautery. In the present improved state of surgery, however, this harsh method of treatment is laid aside. The practice is good as a means of producing adhesion, where a cavity has been exposed; but Mr. Lawrence thinks the common use of the cautery has lost less ground than the humane, the rational, and the liberal mind hath a right to expect. He says, "We are fully assured, upon long and impartial trial and observation, that in six cases in twelve where this system of torture has been adopted it was unnecessary and prejudicial. The operation of firing is made use of in relaxation of the tendons, from sprains, and long and violent exercise. It is supposed to act as a bandage, from its contracting the dimensions of the skin, and causing a considerable and equal pressure on the internal parts. Upon this principle, colts intended for the turf are frequently *fired* when very young, to prevent what is termed *breaking down*; but it may be doubted whether, in thus contracting the skin, the freedom of the action of the limb is not more injured than the animal is benefited by this artificial addition to its strength. Where blisters are considered not sufficiently powerful, firing is employed; as in spavins, splints, curbs, windgalls, and weaknesses of the joints. It is used also in the operations of *docking* and *castration*, in the removal of glandular enlargements, and of the lampas; and by some to cause a speedy determination of the blood to particular situations, as the extremities in internal inflammations, &c. After the operation of firing, where the case will allow of it, the animal should be frequently walked gently about; and if he can be turned loose into an open stable, or, when the weather is favourable, into a field, it will considerably alleviate the pain and stiffness that he will undoubtedly experience. When

horses are *turned out* after firing, the practice of applying *cold charges* is unnecessary and ridiculous: blisters, however, may be used with great propriety. It has been disputed whether the operation of firing is the most effectual with the straight line or in the feather-like manner: in our opinion, each advocate may indulge his fancy with pretty nearly the same advantage."

**CAUTING IRONS**, such instruments in veterinary practice as are used in the operation of *firing*. The edge of the iron should not be too thin, but rather blunt than otherwise: the heat employed should be the red, and should never farther approach to that of the white. When the instrument is taken from the fire, every extraneous particle ought to be removed, by lightly rubbing the sides on some smooth substance: this caution may prevent many little inconveniences. The mechanism of the iron should be such as to assist, as much as possible, the firmness and steadiness of the hand of the operator.

**CAVA, or VENA CAVA**, the great vein which returns the whole of the blood, after it has gone the round of the circulation, into the heart. See **BLOOD-VESSELS**, and **HEART**.

**CAVALIER**, a name formerly given to any accomplished gentleman who excelled in the knowledge of horses, and was thoroughly practised in the art of riding them. The word is French, and has no synonyme in our language.

**CAVERNOUS**, a term applied to ulcers which are deep, wide within, and narrow at the entrance.

**CAVESON, or CAVEZON**, from *cavezzana*; an apparatus resembling the mufroll, which is used in the breaking of horses. From its formation, it binds and pinches the nose, and regulates the action of the animal to which it is applied. The caveson was originally made of strong twisted cord; afterwards of chains of iron, with sharp saw-like teeth; but, whenever iron is now employed, the teeth are omitted, and it is usually covered with leather, or other soft substance.

**CAVITY**, a term used by anatomists to signify any hollow circumscribed place, whether filled with contents or wholly empty. Thus we have the *cavity* of the abdomen, thorax, &c. in the dissection of animals.

**CAYENNE PEPPER**, the *capsicum annuum* of Linnaeus, a common plant in our gardens. The great activity of this as a medicine in human diseases, seems to qualify it for the adoption of veterinary practitioners; but whether the stomachs of brute animals are equally sus-

ceptible of its stimulus, remains to be ascertained.

**CELLULAR MEMBRANE**, *tela cellulosa*, *panniculus adiposus*; *adiposa*, *pinguedinosa*, and *reticularis membrana*; the French call it *tissu cellulaire*, *tissu muqueux*, and *l'organe cellulaire*. This membrane is of the greatest extent, and of the utmost consequence, in the structure of every animal; for it not only enfold, but it connects and penetrates every part; indeed it seems to be the very constituent of most, if not all, the parts that are called the solids in our bodies. Experiments prove that all *membranes*, without exception, and the vessels, which are hollow *membranes*, the parenchymatous substance of the viscera, ligaments, and a great part of the bones, either are, or have been, *cellular membrane*. The *cellular membrane*, by being compacted in different degrees of firmness, forms these solids. Air introduced under the skin diffuses itself through all the surface of the body, penetrates into the interstices of the muscles; and Haller asserts, that even the vitreous humour of the eye hath received the flatus of an emphysema.

Some describe the *cellular membrane* not as one, but as a congeries of many membranous laminæ, joined irregularly to each other at different distances, so as to form numerous interstices of different capacities, and which communicate with each other. These interstices they call *cellulae*, and the substance made up of them *cellulous substance*.

But generally, and that most properly, it is considered as being of two kinds, viz. reticular and adipose; and is described as a composition of ductile *membranes* for the lodgment of oil, connected by a sort of net-work. In some parts its substance is merely a net-work of slender fibres, and small *membranes* which give it ductility and looseness; for instance, under the skin of the penis and scrotum. In other parts, it is more or less loaded with oil, and is less porous or spongy in its substance. Dr. Hunter uses the term *cellular* as the generical name, and the terms reticular and adipose for expressing the two species. He also observes, that the reticular part is evidently dispersed through the whole body, except, perhaps, in the substance of the bones, of the brain, and in the humours of the eye; that it is found in a much greater degree in the belly of a muscle than in the tendon, in which it is scarcely discerned. And he is of opinion, that the adipose *membrane* is composed of two kinds of cells: viz. the reticular, which communicate with each other;



and adipose, which are distinct, and are the reservoirs of the animal oil, or a white granulated matter capable only of being fused by heat; the cells of which containing it are called *facculi adiposi*. He urges, as a proof of his opinion, that the water in an anasarca goes downward while we are in an erect posture, but the oil does not. The oil is supposed to be secreted by the small arteries, and occasionally absorbed into the circulation. Though Dr. Hunter thinks that, wherever there is fat in an animal, there is a particular glandular apparatus, super-added to the reticular *membrane*, consisting of vesicles, or bags, for lodging the animal oil, as well as vessels fitted for its secretion.

Whether or not the *cellular membrane* be the basis of all the organized and vascular parts, Dr. Hunter hath proved, that the most simple parts of it are vascular; that the callus which unites broken bones is itself bone, and also vascular; that the morbid adhesion between the lungs, &c. and their adjacent parts, are vascular, and that a cicatrix in the skin is vascular. Whence he infers, that all the solids are organized, and that, whether lengthened or renewed, they shoot in a vascular form. But here the doctor speaks of the visible parts.

The *cellular membrane* receives the terminations of the nerves, both of the brain and of the medulla spinalis. Perhaps it is formed of the continuation of their coats, and is the termination of them.

The ducts which carry off the fluid secreted in this membrane pass out between two membranes, like the ureters in the bladder.

The uses of this membrane are many; some of which are of the utmost importance, considered in a medical view, and others but little understood. Among the variety, the following are sufficiently obvious.

1. It fills up interstices, and gives an agreeable contour to an animal body.
2. It is a cushion to defend against pressure; hence it is of a thicker composition in young animals.
3. It connects the parts of the body, but so as to admit of a sliding motion on the circumjacent parts.
4. In some parts of the body it serves as a bed for tender parts to be lodged on, as in the orbit, scrotum, &c.
5. It serves as a reservoir for animal oil.
6. And, from observing that the destruction of it in a muscle is always attended with a loss of motion there, some have concluded it to be of use in conveying the principle of life, and duly distributing it throughout the body.

This membrane is the seat of abscesses, the leucophlegmatia, emphysema, anasarca, &c.

CEPHALALGIA, the HEAD-ACH, a term generally used, whether the disease be acute or chronic. It may be an original affection or symptomatic. Its existence in brute animals can only be conjectured from the signs which accompany it.

CEPHALICA VENA, the cephalic vein. It was so called in the human subject, because the head was supposed to be relieved by taking blood from it. This vein comes over the shoulder, between the pectoral and deltoid muscles, and runs down the back part of the arm: when it gets to, or a little below, the bending of the arm, it divides into two; the inner of the two branches is called the *Mediana Cephalica*. It is a branch from the axillary vein, and may be traced in different quadrupeds.

CEPHALICS, a class of medicines supposed to possess the peculiar property of removing diseases of the head. These are said to act by imparting energy to the brain and nervous system, when these are deficient. See APOPLEXY, STAGGERS, &c.

CERA, Wax, a well known concrete substance, collected by bees from flowers and vegetables, and melted from their combs after the separation of their honey. Wax is an ingredient in salves, and other compositions for veterinary uses.

CERATE, CERATUM (from *cera*, wax). *Cerates* chiefly differ from plasters in consistence, being a softer kind of plaster, or harder kind of ointment. Their consistence is very convenient: when mercury is made up in plasters, a sufficient quantity is not absorbed from them to produce any valuable effect; but in a *cerate* it is more powerful. The general rule for *cerate* is, eight parts of oil, or nine of fat or lard, four of wax, and one or two of powders: the following, however, will furnish examples of *cerates* employed in veterinary practice.

#### EPULOTIC CERATE.

By Mr. Taplin.

Take White diachylon plaster;  
Olive oil, of each two ounces.  
Locatellus's balsam;  
Balsam of Capivi; of each one ounce.

Melt the first and third of these in the olive oil, and when the whole is nearly cool, stir in the balsam of Capivi till it is perfectly incorporated.

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### WHITE LEAD CERATE.

By Mr. John Lawrence.

Take of Wax six ounces;

Olive oil, three pounds;

Ceruse, finely powdered, one pound.

The wax being first melted with a little of the oil, and the rest gradually added, the ceruse is, lastly, to be stirred in, and the agitation continued till the ointment is become cold. In some cases Mr. Lawrence advises the addition of one ounce of sugar of lead, previously rubbed with a little of the oil.

### CALAMINE CERATE.

Take of Yellow wax,

Prepared calamine, of each half a pound;

Olive oil, one pint.

Liquify the wax with the oil, expose it to the air, and as soon as the mixture begins to grow stiff, sprinkle in the calamine; keeping them constantly stirred together till the cerate be quite cold.

For veterinary purposes, colcothar, burnt alum, prepared verdigrise, and other powerful astringents, have been generally added, according to the views of the practitioner and the peculiar nature of the case.

The term *cerate* most properly belongs to that class of ointments which are of a healing quality, and contain wax (*cera*) in their composition; but other ointments have been called by this name. See OINTMENT.

CEREBELLUM. See BRAIN.

CEREBRUM. See BRAIN.

CERIA, or CERIE (from *cereus*). See TAPE-WORM.

CERUMEN (from *cera*, *wax*); the wax in the EARS. The Latins call it *cereu*, *aurium ferdus*, & *marmorata aurium*, *cypcele*, *cypselis*, *fugle*. It inviscates and retains insects, and prevents their hurting the membrana tympani. It is bitter and viscid, consequently impregnated with acrid lixivial salts, mixed with pinguious and oily particles. These principles render its qualities very similar to those ascribed to the bile, with which it agrees in many particulars. It is separated from the glands in the part of the ear in which it is found. It is fluid when first discharged, but soon thickens by lying. Wax, when hardened, occasions deafness.

CERUSE, an oxide of lead, made by exposing that metal to the steam of vinegar. By degrees the lead is corroded, and converted into a white powder, considerably more easy of solution. The calces of lead dissolve by heat in ex-

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pressed oils: these mixtures are the basis of several officinal plasters and unguents. Crystals of this metal, made with distilled vinegar, are popularly called, from their sweetish taste, *Sugar of Lead*, but by the London College *Cerussa Acetata*.

CERUSE, ACETATED, *Sugar of Lead*. The following is the method of preparing it:

Take of Ceruse, one pound;

Distilled vinegar, one gallon and a half.

Boil the ceruse with distilled vinegar, until the vinegar become sufficiently saturated, then filter the vinegar through paper, and, after due evaporation, set it to crystallize.

In the Edinburgh Dispensatory the following method is directed:

Put any quantity of ceruse into a cucurbit, and pour thereon ten times the quantity of distilled vinegar. Digest them together for some days in a sand-heat, till the vinegar has acquired a sweetish taste, when it is to be suffered to settle, and then poured off. Add fresh vinegar to the remainder, and repeat this process till the menstruum no longer extracts any sweet taste. Let all the impregnated liquors rest for some time; and after they have been poured from the fæces, evaporate them in a glass vessel, to the consistence of thin honey; so that, upon being set in a cool place, the sugar may shoot into crystals, which are afterwards to be dried in the shade. Exhale the remaining liquor to a pellicle, set it again in the cold, and more crystals will shoot. Repeat this operation till no crystals can be any longer obtained.

Ceruse (especially that sort called *flake lead*, which is not, like the others, subject to adulteration) is much preferable either to minium or litharge for making the sugar of lead; because the corrosion, which it has already undergone from the steam of vinegar, disposes it to dissolve more readily. It should be finely powdered before the vinegar is put to it, and during the digestion, or boiling, every now and then stirred up with a wooden spatula, to promote its dissolution, and prevent its concreting into a hard mass at the bottom. The strong acid obtained from the caput mortuum of vinegar may be employed for this process to better advantage than the weaker, though purer, acid, before directed. If a small quantity of rectified spirit of wine be prudently added to the solution as soon as it is duly exhaled, and the mixture



suffered to grow cold by slow degrees, the sugar will concrete into very large and transparent crystals, which are scarcely to be obtained by any other method.

The crystals are ordered to be dried in the shade; because, if they are exposed to the sunshine, they acquire a blackish colour, soon lose their saline condition, and the lead gradually assumes its metalline form; and this is supposed to happen from the absorption of light, but this opinion is incorrect.

As an external remedy, the acetated ceruse is more efficacious than most other preparations, in the several intentions to which they are applied. Some have ventured upon it internally in veterinary practice. It is very powerful as an astringent; but, almost as certainly as it does good, it occasions symptoms of another kind, often more dangerous than those removed by it, and sometimes fatal.

CERVI, SPINA, *Buckthorn*. See BUCKTHORN.

CERVICAL (from *cervix*), belonging to the neck. The nerves, arteries, and veins of the neck in all quadrupeds have this appellation.

CERVIX, the anterior portion of the neck of a quadruped, as the posterior is called COLUM. This term is also applied figuratively by anatomists to different parts; as the *cervix vesicæ, uteri, &c.* the neck of the bladder, of the womb, &c.

CERVUS, the DEER, a genus of quadrupeds, belonging to the order of *Pecora*. The horns are solid, brittle, covered with a hairy skin, and growing from the top; they likewise fall off and are renewed annually. There are eight fore-teeth in the under-jaw, and they have no dog-teeth. The species of this genus enumerated by Linnæus are seven; but, as few of them can be expected to fall under our notice in this place, we shall confine ourselves to,

1. The ELEPHUS, or Stag, with long cylindrical ramified horns bent backwards, and slender sharp brow antlers. The colour is generally a reddish brown, with some black about the face, and a black list down the hind part of the neck and between the shoulders. Stags are common to Europe, Barbary, the north of Asia, and America. In spring they shed their horns, which fall off spontaneously, or by rubbing them gently against the branches of trees. It is seldom that both horns fall off at the same time, the one generally preceding the other a day or two. The old stags cast their horns first, which happens about the end of February or beginning of March, but young ones not till

some time in May; though in this there is great variety, owing to the greater or less severity of the preceding winter, and other causes. As soon as their horns have acquired their full size and solidity, the stags rub them against the trees, in order to polish and clear them of a skin with which they are covered; and it is at this time that they begin to feel the impressions of love. Towards the end of August they search for the hinds. They cry aloud; the neck and throat swell: becoming restless, they run about till they find the females, whom they pursue, and compel into compliance. The old hinds likewise come in season before the younger. When two stags approach the same hind, they fight, and the combat never terminates but in the defeat or flight of one of the rivals. The hinds, however, prefer the old stags, not because they are most courageous, but because they are much more ardent. As the males pass from one to another with great eagerness, and taking little food, they become perfectly exhausted; and hence, at the end of the rutting season, are so meagre, that they do not recover their strength for some time. The rutting season of old stags commences about the beginning and ends about the 20th of September. Those of six or seven years old begin about the 10th of September, and conclude in the beginning of October. Young stags begin about the 15th of October; and at the end of October the rutting is over, except among the *prickets*, or those that have entered into their second year; because they, like the young hinds, are latest of coming into season. Hence, at the beginning of November, the season of love is entirely over; and the stags, during this period of weakness and lassitude, are easily hunted down. However, in seasons when acorns and other nuts are plentiful, the stags soon recover their strength, and a second rutting frequently happens at the end of October; but it is of much shorter duration than the first. In warmer climates the rutting season is more forward. Aristotle informs us, that in Greece it commences in the beginning of August, and terminates about the end of September. The hind, after going with young eight months and some days, produces a fawn in May or the beginning of June. But the young are not called *fawns* or *calves* after the sixth month: the knobs of their horns then begin to appear, and they take the name of *knobbers* till their horns lengthen into *spears*, and then they are called *brocks* or *staggers*. During the first season, they never leave their mothers. In winter, the stags and hinds of all ages keep together in flocks,

which are always more numerous in proportion to the rigour of the season. They separate in spring: the hinds retire to bring forth; and, during this period, the flocks consist only of knobbers and young stags. In general, the stags are inclined to associate, and nothing but fear or necessity obliges them to disperse. The life of the stag is spent in alternate plenty and want, vigour and debility, health and sickness, without having any change introduced into his constitution by these opposite extremes. He lives as long as other animals which are not subjected to such vicissitudes. As he grows five or six years, he lives seven times that number, or from 35 to 40 years. What has been reported concerning the longevity of the stag merits no credit.

The stag appears to have a fine eye, an acute smell, and an excellent ear. He is a simple and yet a curious and crafty animal. When hissed or called to from a distance, he stops short, and looks steadfastly, and with a kind of admiration, at carriages, cattle, or men; and if they have neither arms nor dogs, he moves on unconcernedly, and without flying. He appears to listen with great tranquillity and delight to the shepherd's pipe; and the hunters sometimes employ this artifice to encourage and deceive him. In general, he is less afraid of men than of dogs, and is never suspicious, or uses any arts of concealment, but in proportion to the disturbances he has received. He eats slow, and has a choice in his aliment; and, after his stomach is full, he lies down, and ruminates at leisure. He seems to ruminate with less facility than the ox. It is only by violent shakes or hiccups that the stag can make the food rise from his first stomach, owing to the length and direction of the passage through which the aliment passes. The neck of the ox is short and straight, but that of the stag is long and arched; and therefore greater efforts are necessary to raise the food. These efforts are made by a kind of hiccup, the movement of which is apparent, and continues during the time of rumination. His voice is stronger, and more quivering, in proportion as he advances in years. The voice of the hind is shorter and more feeble. She never bellows from love, but from fear. The stag, during the rutting season, bellows in a frightful manner: he is then so transported, that nothing disturbs or terrifies him. He is therefore easily surpris'd: being loaded with fat, he cannot keep long before the dogs. But he is dangerous when at bay, and attacks the dogs with a species of fury. He drinks none in winter nor in spring, the dews

and tender herbage being then sufficient to extinguish his thirst; but, during the parching heats of summer, to obtain drink, he frequents the brooks, the marshes, and the fountains; and in the season of love he is so over-heated, that he searches every-where for water, not only to satisfy his immoderate thirst, but to bathe and refresh his body. He then swims easier than at other times, when his fat proves an incumbrance; and he has even been observed crossing very large rivers. It has also been alleged, that, attracted by the odour of the hinds, the stags, in the rutting season, throw themselves into the sea, and pass from one island to another, at the distance of several leagues. But the stag leaps still more nimbly than he swims; for, when pursued, he can easily clear a hedge or pale fence of six feet in height. Their food varies in different seasons; but in summer, when they have great choice, they prefer rye to all other grain, and the black berry-bearing alder to all other wood. The flesh of the fawn is very good; that of the hind and knobbler not absolutely bad; but that of the stag has always a strong and disagreeable taste. The most useful parts of this animal are, the skin, which makes a pliable and very durable leather; and the horns, which are used by cutlers for knife-handles, &c. In England the stag is become less common than formerly; its excessive viciousness during the rutting season, and the badness of its flesh, induce most people to part with the species. In the Highlands of Scotland, stags are still found in herds of four or five hundred together, ranging wild over the vast hills of the north. Formerly the chieftains used to hunt them with the magnificence of eastern monarchs, assembling four or five thousand of their clan, who drove the deer into the toils or to the stations the lairds had placed themselves in: but as this pretence was frequently used to collect their vassals for rebellious purposes, an act was passed prohibiting any assemblies of this nature. Stags are likewise met with on the moors that border on Cornwall and Devonshire; and in Ireland on the mountains of Kerry, where they add greatly to the magnificence of the romantic scenery in the lake of Killarney. The stags of Ireland, during its uncultivated state, and while it remained an almost boundless tract of forest, had an exact agreement in habit with those that range at present through the wilds of America. They were less in body, but very fat; and their horns of a size far superior to those of Europe, but of a form similar in all respects.

The chase of the stag has become an art,



and requires a species of knowledge which can only be learned by experience. It implies an assemblage of men, horses, and dogs, all so trained, that their movements must concur in producing one common end. The huntsman should know the age and the sex of the animal; he should be able to distinguish with precision whether the stag he has harboured with his hound be a knobber, a young stag in his sixth or seventh year, or an old stag. The chief marks which convey this intelligence are derived from the foot and the excrement. The latter of these requires, perhaps, greater experience than the knowledge of the foot; but without it the huntsman would be unable to give a proper report to the company. After the report of the huntsman, and the dogs are led to the refuge of the stag, he ought to encourage his hound, and make him rest upon the track of the stag till the animal be unharboured. Instantly the alarm is given to uncouple the dogs, which ought to be enlivened by the voice and the horn of the huntsman. He should also diligently observe the foot of the stag, in order to discover whether the animal has started and substituted another in his place. But it is then the business of the hunters to separate also, and to recal the dogs which have gone astray after false game. The huntsman should always accompany his dogs, and encourage, without pressing them too hard. He should assist them in detecting all the arts of escape used by the stag; for this animal has remarkable address in deceiving the dogs. With this view he often returns twice or thrice upon his former steps; he endeavours to raise hinds or younger stags to accompany him, and draw off the dogs from the object of their pursuit: he then flies with redoubled speed, or springs off at side, lies down on his belly, and conceals himself. In this case, when the dogs have lost his foot, the huntsmen, by going backwards and forwards, assist them in recovering it. But if they cannot find it, they suppose that he is resting within the circuit they have made, and go in quest of him. But if they are still unable to discover him, there is no other method left but, from viewing the country, to conjecture where he may have taken refuge, and repair to the place. As soon as they have recovered his foot, and put the dogs upon the track, they pursue with more advantage, because they perceive that the stag is fatigued. He has now no other resource but to fly from the earth which he treads, and get into the waters, in order to cut off the scent from the dogs. The huntsmen go round these waters, and again put the

dogs on the track of his foot. The stag, after taking to the water, is incapable of running far, and is soon at bay. But he still attempts to defend his life, and often wounds the dogs, and even the huntsmen when too forward, by blows with his horns, till one of them cuts his hams to make him fall, and then puts an end to his life by a blow of a hanger. They now celebrate the death of the stag by a flourish of their horns; the dogs are allowed to trample upon him, and at last partake richly of the victory by devouring his flesh.

2. The *DAMA*, or *Fallow-deer*, buck and doe, with horns branched, compressed, and palmated at the top. The colour is various; reddish, deep brown, white, or spotted. This species is not so universal as the stag: though rare in France and Germany, it is found in Greece, the Holy Land, and the north of China. They are very numerous in England; but, except on a few chases, confined in parks: none existed originally in America. They are easily tamed, and their flesh, which goes by the name of venison, is in high esteem among the luxurious. During rutting time they will contend with each other for their mistresses, but are less fierce than the stag: during that season the male will form a hole in the ground, make the female lie down in it, and then often walk round and smell at her. Mr. White has observed that the head of a fallow-deer is furnished with two *spiracula*, or breathing-places, beside the nostrils. This curious construction must be of singular service to beasts of chase, by affording them a free respiration; and no doubt these additional nostrils are thrown open when they are hard run. Mr. Pennant has observed the same curious organization in the antelope.

The diseases of deer have not hitherto been deemed worthy of scientific research; consequently, these share the fate of many animals of no reputation in the sight of man. Considerable numbers die occasionally of epidemic diseases, and they are also subject to some of the complaints that affect sheep.

**CETACEOUS** (from *cete*, a whale). Those fishes are thus called which are very large, and bring forth a perfect animal, instead of spawn, like the whale; or which, like viviparous animals, respire by means of lungs, generate, conceive, bring forth young, and nourish them with milk.

**CHACK**, a term used in horsemanship. A horse is said to chack, or *beat upon the hand*, when his head is not steady, but he tosses up his nose, and shakes it all of a sudden, to avoid the subjection of the bridle. In order to fix

and secure his head, we need only to put under his nose-band a small flat band of iron, bended archwise, which answers to a martingal.

**CHAFF**, the husks of corn separated by thrashing and winnowing. The rind of corn is also called chaff; and the same name is given to straw when cut small by a machine called a chaff-cutter, or cutting-box. Chaff of the latter description is very commonly given to horses and other cattle mixed with their corn; and this kind of food is said to afford not only fatness but fineness of skin to all sorts of stock. It is probable that this arises from the necessity of a more perfect mastication of the grain, and intermixture of saliva, before it is swallowed.

**CHAFING**, an excoriation or loss of skin from friction. This frequently happens to draught cattle, in consequence of some unequal pressure of the harness, and occasions them severe pain and inconvenience in the performance of their destined services. Humanity therefore requires, that particular care should be taken to prevent chafing from these causes, which the poor animal can only make known by its wincing in consequence of pain, and sometimes refusing to draw. When it happens, the raw place should be secured from further rubbing, by bolstering the collar or harness by which the accident has been occasioned with hay, wool, or some soft substance, so that the bearing shall be on a sound part. When this is done, the skin will soon be restored by washing with brandy, lead-water, or a weak solution of alum or blue vitriol, or by applying a plaster of any healing salve.

**CHALYBEATES**, a class of remedies whose tonic properties depend on the quantity of *steel* (or *iron*) contained in them. The accidental solutions of iron in many of our springs supply *chalybeate waters*, too weak, however, for veterinary uses. Compositions of bark, vitriolated iron, and bitters, are advised by Mr. John Lawrence, and others, in diseases of the horse. For that called *Chalybeate Beer*, see **APPETITE**.

**CHAMOMILE**, *CHAMÆMELUM NOBILE*; common creeping or trailing perennial chamomile. It is the *anthemis nobilis, foliis pinnato-compositis linearibus acutis subvillosis*. Class Syngenesia; Ord. Polygamia Superflua; Spec. 7. Linn. Gen. Plant. 970.

It is found wild in moist pasture-grounds in many parts of England, but is commonly cultivated in gardens. It flowers in July and August, and so on through the summer; and the seeds come to perfection at the time of flowering. The leaves and flowers have a strong, though not ungrateful, smell, and bitter taste. The flowers are more aromatic and bitter than

the leaves and the stalks; the yellow disk is by far the strongest part. The smell and taste are both improved by careful drying. These flowers lose very little by long keeping.

The flowers are used internally in the treatment of human diseases; they are bitter, emenagogue, carminative, anodyne, antispasmodic; but employed in veterinary practice only as an ingredient in fomentations, cataplasms, &c. and might, perhaps, be wholly omitted as an inefficient remedy.

Chamomile flowers give out their virtue to water and to spirit: the dry flowers make a more agreeable infusion than the fresh ones, or newly dried; and the most grateful is when cold water only is used. Distilled with water, they impregnate it strongly; and, from a large quantity of flowers, a small quantity of essential oil may be thus obtained. This oil is of a yellowish colour, and possesses all the virtues of the flowers in an eminent degree.

Externally, this herb is reckoned discutient and antiseptic; but the flowers possess the greatest degree of these qualities. Dr. Pringle says, that their antiseptic power is 120 times greater than that of sea-salt.

A *green oil* is prepared from the herb, while it is fresh, in April and May at farthest, by boiling it with olive oil until the leaves are almost crisp: but, as boiling dissipates all the best part of the herb, the properest method is to steep the flowers cold in the oil, and to strain it off as it is wanted. An *Extract of Chamomile* is also made by boiling the flowers in distilled water, then pressing out the decoction, straining it, and, after the fæces have subsided, reboiling it in a water-bath, saturated with sea-salt, to a proper consistence.

**CHANFRIN**, in the manege, denotes the fore part of a horse's head, extending from under the ears, along the interval between the eye-brows, down to his nose.

**CHANGE**, in the manege. To *change a horse*, or *change hand*, is to turn or beat the horse's head from one hand to the other; from the right to the left, or from the left to the right. You should never change your horse without pulsing him forward upon the turn; and after the turn push him on straight, in order to a stop.

**CHANNEL**, in the manege, is used for the concavity in the middle of the lower jaw of a horse, where the tongue lies. This hollow being bounded on each side by the bars, terminates in the grinders, or maxillary teeth. The barbles grow in this channel.

**CHANNEL-BONES**, a name given by GIB-



son, and other writers on farriery, to the clivicles, or collar-bones, in the horse. See CLAVICLE.

CHAPELET, in the manege, a couple of stirrup-leathers, mounted each of them with a stirrup, and joining at top in a sort of leather-buckle, called the head of the chapelet, by which they are made fast to the pommel of the saddle, after being adjusted to the rider's length and bore. They are used both to avoid the trouble of taking up or letting down the stirrup every time that a gentleman mounts on a different horse and saddle, and to supply what is wanting in the academy saddles, which have no stirrups to them.

CHAPERON *of a BIT-MOUTH*, a term used only for scatch-mouths, and all others that are not cannon-mouths, signifying the end of the bit that joins to the branch just by the banquet. In scatch-mouths the chaperon is round, but in others it is oval; and the same part that in scatch and other mouths is called chaperon is in cannon-mouths called froncean.

CHARBON, in the manege, that little black spot or mark that remains after a large spot in the cavity of the corner tooth of a horse. About the seventh or eighth year, when the tooth becomes smooth and equal, it disappears.

CHARGE, in the old practice of farriery, a preparation of a middle nature between an ointment and a plaster, or between a plaster and a cataplasm; or participating of all three, viz. being partly made up of oils, meals, pulps; and partly of gums and resinous things, that give a stiffness and body to plasters. And therefore, as all charges are only a kind of soft or liquid plasters, the ancients, who first contrived them, made greater use of them than any other topic whatever in all outward diseases, as being the best adapted to creatures that are covered with hair.

Charges are of different intentions, as are all other forms of outward application; some being chiefly emollient, others discutient, and some repellent, of which kind are most of those called *cold* charges; some of which are also styled defensive or strengthening. Their principal use is to restore parts that are weakened by falls, bruises, or any other kind of accident.

The following is a specimen of this kind of composition:

Take of Mastick,  
Dragon's blood,  
Myrrh,  
Gum tragacanth, of each one ounce;  
Common pitch, six ounces;  
Bole,  
Litharge in fine powder, of each  
two ounces.

Boil all these in a sufficient quantity of vinegar over a slow fire, until they grow ropy; then take them off, and add bole armoniac in fine powder sufficient to make a charge.

This is described to be of great service in strains, and to abate the heat and inflammation that attend large wounds, being applied over the dressings. It is likewise used in inflammation of the eyes, being laid all over the head and temples.

A variety of other charges may be met with, under their several names, in the course of this work; but the curious reader will be gratified by consulting Gibson's Farrier's Dispensatory upon this subject.

CHASE, a range or station for wild beasts of the forest, from which it differs in the following respects: that it may be in the possession of a subject, which a forest in its proper and true nature cannot; neither is it commonly so large, nor endowed with so many liberties, as the courts of attachment, swainmote, justice seat of eyre, &c. On the other hand, a chase differs from a park, for that it is of a larger compass, having inclosed within it a great variety of game, and being under the management of more overseers or keepers.

CHASE, or CHACE, the pursuit or following of game; HUNTING. Under this article it may not be improper to state the general opinion of sportsmen as to what sort of chase is most proper to train a hunting-horse to in the first instance.

Some advise, that a horse, designed either for a buck-hunter or fox-hunter, should be used at first and trained up in that sort of exercise; whilst others are of opinion that such chases are too violent for a young horse, and therefore choose rather to train him after harriers: which last seems to be the most eligible.

As for the stag, buck, and hind, there is not much difference in the hunting of them; so that the inconveniences from each chase are in a manner the same; for, whichever you hunt, it is either in covert or at force.

If deer be hunted in a park, they usually retire to the most woody parts of it, as a refuge from the pursuits of their enemies. This is both unpleasant to the rider, and troublesome to the horse, to follow the dogs through the thick bushes; and besides, in parks, the ground is usually full of mole-banks, trenches, &c. which are dangerous for a young horse to gallop over, till he has attained to some perfection in his paces.

But if deer be turned out of the park, and hunted at force, you will find, that, as soon as

you have unharboured or roused them, they will immediately make out end-ways before the hounds, five or six, nay sometimes ten miles, they following in full cry so swiftly, that a horse must be compelled to run up and down hill without intermission, leaping hedge, ditch, and dale; nay often crossing rivers; to the great danger of the rider, as well as of the horse. So that it should seem altogether improper to put a young horse to such violent labour at the first, till he hath been gradually inured to hard service.

The season for these chases begins about Midsummer, and ends at Holyroodtide, a part of the year in which the sun's heat is excessive; so that, besides the danger of breaking his wind, and perhaps occasioning a rupture of the intestines, from the straining of his limbs by such desperate riding, you may create in a young horse an aversion to his labour, and in a short time the horse would prove altogether useless.

Horses employed in this violent exercise should therefore be such as have been long trained to hunting.

Young horses, the duke of Newcastle observes, are as subject to diseases as young children, therefore he advises, that, when any one would buy a horse for use in his ordinary occasions, as for journeys or hunting, he should never buy a horse till the mark be out of his mouth. If he be found, in that case, he will last eight or nine years, with good keeping, and will never fail. "I am always ready," says he, "to buy for such purposes an old nag of some huntsman or traveller; for he gallops on all grounds, leaps over hedges and ditches, and such an one will not fail either on a journey or any-where else."

The next kind of chase is that of the fox; which, though a recreation much in use, and highly applauded, yet is inconvenient for the training of a young horse, it being swift without respite, and of too long continuance. But the greatest inconvenience that happens in this chase is, that, when a fox is unkennelled, he seldom or ever betakes himself to a champaign country, but remains in the strongest coverts and thickest woods; so that a young horse cannot accompany the hounds, without great risk of being stubbed, or some such dangerous accident.

The fittest horses for a fox-chase are those of great strength and ability, the season beginning at Christmas, which is the worst time of riding, and ending at Lady-day, when the ground is best for it.

The next chase is that of the otter; which is not convenient for a horse, because he that will truly pursue this amphibious animal must often swim his horse, to the equal hazard both of the rider and the horse.

Hare-hunting, therefore, is the best chase both for pleasure and delight, were it not exceptionable on account of the inoffensiveness and natural timidity of the poor animal. It is indeed swift, and of some endurance, like that of the fox, but far more pleasant to the horse, because hares commonly run the champaign country; and the scent not being so hot as that of the fox, the dogs are oftener at fault, and by that means the horse has many rests, by which he recovers wind, and regains strength. For hare-hunting the season begins at Michaelmas, and lasts till the end of February.

The best dogs to bring a horse to perfection of wind and speed are the fleet northern hounds; for they, by their hard running, will draw him up to that extraordinary speed, that he will not have time to loiter; and by continual practice, will be inured and habituated to the violence of their speed, so that in a short time he will be able to go over all sorts of ground, and be at such command upon the hand, that he will strike at what rate you please, and three quarters speed will be the least troublesome to him. This may probably be one of the reasons why the northern breeders generally excel those of the south; since the speed of their hounds evidently contributes to the excellence of their horses.

CHEMISTRY, CHEMIA, *vel* CHIMIA (from the Arabic term *chaniab*, from *chamab*, to burn); or, as some say (though much difficulty attends the discovery of its etymology and its orthography), from *χυμος*, any sort of juice, but particularly from our aliment after digestion. Among the Greeks it was called *χημία*, *χημεία*, and *χυμεία*; the last of which hath been generally followed by the later writers on this subject, though the most approved editors and other learned men have preferred the former. The modern Greeks write *χημεία*. As to the word *chemy*, it is a very trifling innovation. It is also called *Archimagia*, because by it gold has been attempted to be made; *Pyrotechnia*, from the art being conducted by fire.

Chemistry may be called the anatomy of natural bodies, or reducing them to their component parts by attraction. Dr. Aiken defines it to be the art of combining or separating the constituent parts of bodies by fire. Chemistry is an important branch of natural philosophy, and hath for its objects the properties of bodies,



which it discovers by analysis and by combinations. Besides its use in various other arts, it hath introduced many improvements into physic. It hath furnished many of the most powerful remedies, by putting into our hands some of the active principles of bodies, divested of those other parts which are but clogs while in their natural combined state. The veterinary art is under no less obligation to it, and its professors will do well to include it in their course of study.

**CHEMOSIS** (from *χαίω*, to gape); called also *chymosis*. It is a variety of that species of ophthalmia called *ophthalmia membranarum*. When the inflammation is very great, it causes the tunica conjunctiva so to thicken or project, that the cornea, or transparent part of the sclerotica, appears depressed and sunk in the globe. When the ophthalmia is in this state, it is for the most part accompanied with violent pain. As some observe, in this state of the inflammation, the white part of the eye becomes more like raw flesh; or, as others, that it resembles the pile of red velvet. All the transparent part of the cornea often comes away by suppuration, which destroys the anterior chamber of the eye. The cicatrix subsequent to the suppuration hinders the crystalline and vitreous humours from falling out, and by that means the entire decay of the globe is prevented; but sometimes both happen. In this, as in other inflammations of the eyes, every method ought to be pursued which can most immediately subdue the inflammatory symptoms. See EYE.

**CHEST**, that cavity of a horse or other animal which contains the organs of respiration and circulation invested in their proper membranes. It includes the *pleura*, *mediastinum*, the heart and lungs, with a glandular substance called the *thymus*, from its resemblance to a leaf of thyme. This lies across the upper part of the breast, and is like a soft pillow to the lungs, especially in brutes, where it is considerably larger in proportion than it is in the human subject.

The *pleura* is a very fine membrane, that lines the whole inside of the *thorax*, or *chest*, the back part of it serving like a duplicature, to cover and inclose the great vessels within it that retain to the heart and lungs, as its exquisite smoothness preserves the lungs from being hurt in their continual dilations. This membrane is the seat of the pleurisy.

The *mediastinum* is a membrane which divides the cavity of the breast like a partition in two halves. In men it is double, and composed merely of the two portions of *pleura*, connected

by cellular membrane; but in a horse it seems undivided, or, at least, the union is so close that its layers cannot be easily separated. Its chief use is to keep the two lobes of the lungs asunder, especially in lying on one side, a posture in which horses often lay themselves to sleep.

The *lungs* (or *lights*, which is their vulgar name) consist of two lobes that fill up the greatest part of the chest, having the *mediastinum* between them. In some quadrupeds each lobe is subdivided into several small lobules, in the same manner as the liver, but not so much in a horse as in other animals that have a greater variety of motions; which Gibbon supposes may be the reason why the horse's lungs are so easily inflamed with hard exercise, and with catching cold.

The *aspera arteria*, or windpipe, which begins with the larynx behind the root of the tongue, descending along the fore-part of the throat, is branched out into the lungs. This canal is composed of circular rings of cartilage, which surround it about two thirds, the back part being a plain section, smooth and even, that it may not incommode the gullet, which takes its course immediately behind it, and upon which it lies. Between the rings is a fleshy membrane on which they are fixed, which also composes the back part towards the gullet. This being muscular, and the rings cartilaginous, give it a spring of action, whereby it contracts and dilates, so as to correspond with all the motions of the neck and breast. At its entrance into the chest, it is divided into two principal branches called its *bronchia*, and is afterwards subdivided into innumerable other branches, the extremities of which compose an infinite number of small cells or air-bladders, which, with the ramifications of the veins, arteries, nerves, and lymphatics, make up the whole mass or substance of the lungs. These cells or vesicles are always filled with air, being distended in inspiration, and are empty and sunk in expiration, and receive from the blood-vessels a quantity of lymph or perspirable matter, which not only keeps the lungs from drying, but makes a large and necessary discharge from the blood, as we may easily perceive from the breath of all creatures in frosty weather, or when we ourselves breathe upon a glass, or any polished metal or stone. The lungs may justly be reckoned among the principal organs of the body, as they are so well adapted in every respect to receive the air, without which we cannot support life one moment, and are no less fitted to communicate oxygen to the blood,

and heat to the body, than to make such discharges as are necessary for the preservation of health.

The *heart* and its *pericardium* are also among the viscera of the thorax: for these see HEART.

**CHEST-FOUNDER**, a term used by the old farriers to denote a chronic inflammation of those parts in a horse which are situated immediately external to the pleura. Gibson calls this disease an *external pleurisy*; consisting in an inflammation of the intercostal muscles, which compose the fleshy parts between the ribs. It proceeds from the common causes of inflammation, and may perhaps be a consequence of inflammation of the pleura itself. (See PLEURISY.) It is known by a stiffness of the body, shoulders, and fore-legs, sometimes attended with a short dry cough in the beginning, and a shrinking when a horse happens to be handled in those parts. The *chest-founder* occurs when the acute symptoms are gone off. While recent it is to be treated as pleurisy, and may be then prevented by bleeding, antimonials, hot-bathes, and pectoral drinks with nitre. Gibson also advises purging, as the likeliest way to prevent the inflammation extending to the muscles of the breast and shoulders, which most usually happens. He objects, however, without any good reason, to outward applications, except when any swelling appears with a tendency to break; in which case he advises to hasten suppuration by the common methods. "I have frequently seen," says he, "these outward inflammations on the fore-ribs come to a favourable issue by falling downwards, and forming abscesses, sometimes on the inside of the fore-leg, a little above the knee, between the interstices of the muscles, and sometimes, which is more troublesome, on the inside, near the onset of the shoulder; but never knew any evil accident happen, but when repellers were indiscreetly used. On the contrary, a critical discharge from those parts promotes health and prevents lameness." The *chest-founder*, however, it is to be remembered, is a chronic disease; and, like rheumatism, admits of blistering, setons, and the free use of external stimulants to the chest.

**CHEVALLER**, in the manege. A horse is said to *chevaller*, when, in passing upon a walk or trot, his far fore-leg crosses or overlaps the other fore-leg every second time or motion.

**CHEWING-BALLS**, a sort of balls contrived for horses to chew, and gradually swallow. They are intended as incentives to appetite, and on some occasions reckoned useful by

farriers, though little, if at all, resorted to by veterinarians of the new school. Gibson gives various formulæ for *chewing-balls*. The following is from *Solleyfell*, and said to have been much esteemed:

Take of Liver of antimony,

Asa foetida, each one pound;

Wood of the bay-tree,

Juniper-wood, each half a pound;

Pellitory of Spain, two ounces;

Let all these be powdered together: then add as much verjuice as is necessary to make the whole into a paste.

To be formed into balls of about an ounce and a half weight.

These are ordered to be used, one at a time, in the following manner: The ball is to be wrapped up in a linen-rag, and a thread fastened to it in such a manner that it may be tied to the bit of the bridle, and kept in the mouth. "When the bridle is taken off," says our author, "the horse will immediately eat; and, when one ball is consumed, another is to be tied up, and put in its place, till the intent is answered."

The animal's resorting with so much alacrity to his provender, it is probable, must have arisen from his endeavour to get the better of the nauseous taste of the ingredients. As a *local* remedy, however, this practice may be worth following.

**CHINE**, in the manege, denotes the backbone, or the ridge of the back of a horse.

**CHIRURGERY** (from *χειρ*, a hand, and *εργον*, work), *manual operation*, **SURGERY**, or that part of medicine which consists of manual operations. In this branch of healing the ancients had great merit in many particulars, and have been followed, without due acknowledgment, by the moderns. The improvements of the latter, however, are an honour to them and to their profession; both by rendering ancient methods more supportable, and introducing new ones entirely unknown to their predecessors, and these in cases where, with them, the patient was left hopeless. The best veterinary practitioners are those who have been first regularly and fully educated as surgeons.

**CHOLAGOGUES**, also **COLEGON** (from *χολη*, bile, and *αγω*, to drive out or evacuate). By *cholagogues* the ancients meant only such purging medicines as expelled the internal fæces, which resembled the cystic bile in their yellow colour, and other properties, as brightness, tenacity, and bitterness. We retain the



word for such purgatives as are found most useful when bile offends, or are of service when the liver is diseased. Of this kind are antimony and calomel, which are supposed to act more powerfully on bile than any other medicine. Under this description, perhaps, aloes may be considered as the first, being generally useful in occasioning the bile to pass freely into the intestines. In veterinary practice this class of remedies is seldom needed.

**CHORION** (from *χωρα*, *receptaculum*). It has sometimes been called *camisia fœtus*, the *shirt of the fœtus*, being in fact the external membrane involving the fœtus. In women, and in many brute animals, the chorion at the first is without any sensible placenta. It is also said to have its name from the *chorus* or crowd of blood-vessels which are spread upon it. It adheres to the amnios by a gelatinous substance, and is divisible into two lamellæ: the *internal* or true chorion is even more thin and pellucid than the amnios, whilst the *external* or false chorion is thick and opaque. This spongy chorion adheres to the uterus at every part, and grows thicker as it approaches the placenta; whilst the internal lamina adheres inseparably to the inner surface of the placenta: hence it is plain, that the substance of the placenta is betwixt these two lamellæ of the chorion. This membrane hath abundance of lymphatic vessels: but, in the human placenta, the vessels cannot be traced by injection on the amnios and chorion; yet the uterus sends veins to the outer chorion: perhaps the arteries do the same. The analogy holds good in most quadrupeds. The use of the chorion is to sustain the umbilical vessels.

**CHOROIDES** (from *χοριον*, *chorion*, and *ειδος*, *likeness*); an epithet of several membranes which, on account of the multitude of their blood-vessels, resemble the *chorion*. It is the *tunica retiformis oculi*, a name of one of the coats of the eye in most animals. It lines the sclerotic, is a thin vascular coat, of a brownish colour generally, said to derive its origin from the pia mater's covering of the optic nerve. The whole fore-part of this coat is called *iris*, and the rest *choroides*. It consists of two laminæ: the exterior is slightly connected with the sclerotica, and is also covered with a black matter, called *nigrum pigmentum*. Both laminæ are extremely vascular: the extremities of the vessels of the inner surface project therefrom, and are termed *villi* and *papillæ*. The black substance which lies between the sclerotica and choroides is also found betwixt it and the retina. Near where the sclerotica becomes transparent, the choroides is

firmly united to it; and at this circle of adhesion the choroides seems to change its colour and texture, appearing as a whitish kind of ring, of a compact substance, and is termed *ciliare ligamentum*. Here the internal lamina of the choroides dips inwards, to make what are termed the processes. The ciliary processes are on the inside, between the iris and choroides, as the ligamentum ciliare is on the outside. The choroides is continued on the inside of the transparent part of the sclerotic, and there forms the iris: the perforation in the middle is called the pupil. The artery is a branch of the carotid. The veins empty themselves into the optic sinuses, which are again discharged into the internal jugulars; but some of these veins communicate with the external veins of the eye, so part of the blood is emptied into the external jugulars. The nerves are from the ophthalmic branch of the fifth pair, and a branch of the third pair. Opposite to the insertion of the optic nerve, the choroides is wanting. See **EYE**.

**CHRONIC**, or **CHRONICAL**, *Chronicus* (from *χρονος*, *time*); an epithet used to signify diseases which continue long, and are without any fever, or at least any considerable degree of it. Thus it is meant to distinguish such diseases from those which proceed rapidly, and terminate soon, and are termed *acute*. Most of the diseases of quadrupeds are of the latter description; yet there is no doubt but an ill-cured acute disorder may be the cause of one that is chronic.

**CHYLE**, *Chylus* (from *χυω*, *to pour out*), called in Paracelsus *chymosum*. In all animals having membranous stomachs, the aliment received is converted into a fluid state; the oily part of it, mixed with the saliva and other juices secreted into the stomach and duodenum, becomes milky, and is called *chyle*. The bile mixing with the digested aliment, when it is conveyed into the duodenum, assists the separation of the nutritious chyle from the excrementitious part of the ingesta. The chyle is conveyed by the lacteals into the circulation, to be converted into blood. The chyle seems to consist of oil, mucilage, water, a coagulable part, and carbonic acid. From the chyle proceeds all that is required to recruit the waste made by the actions of living bodies.

**CHYLIFEROUS**, an epithet applied to that class of vessels in an animal body which are destined to convey the **CHYLE** to the blood. They are otherwise called **LACTEALS**, or **LACTEAL VESSELS**.

**CHYLIFICATION** (from *χυλος*, and *φιο*, *to*

make, and *χυλίζω*, to express the juice from any thing); the first digestion or the changing of the aliment into *chyle* by the power of the stomach.

**CICATRIX**, that seam or elevation of calous flesh or skin remaining after the healing of a wound or ulcer, and commonly called a *scar*. It is the destruction of the cellular membrane by inflammation that causes cicatrices to tuck inwards, as they are always observed to do.

**CICATRIZE**, to heal, or occasion the *skinning over* of a wound or ulcer, after the hollow part has been filled to a level with the surrounding edges by the process called **GRANULATION**. Wounds are cicatrized by astringent lotions, cerates, &c.

**CICUTA**, **HEMLOCK**, a plant much used in medicine, and possessed of great powers, but whether capable of veterinary application is not determined. The species employed is the *conium maculatum* Lin. which is the mildest of the hemlocks. The following description has been given, in order to distinguish it from the rest, and from other plants also to which it is similar in appearance.

The *leaves* are large, with a hollow round rib; of a dark or blackish green colour on the upper side, and of a whitish green underneath; separated into a number of small oblong, somewhat oval, segments, which stand in pairs: these segments are again deeply cut, but not quite divided, on both sides; and many of these ultimate sections have one or two slighter indentations. The flowers consist of five white pointed petals. The seeds are flat on one side, on the other convex, and rendered unequal by five elevated striæ. These striæ are elegantly indented like a saw, and this last is a most certain characteristic. The whole plant is somewhat smooth.

The *root* is biennial, white, the thickness of a finger, often branched: the first year only producing leaves, when it yields, on being cut, a milky liquor; the second year, when it has stalks, it is almost juiceless.

The *stalk*, which rises several feet high, is as thick as the finger, round, hollow, with impervious knots, greenish, and having commonly spots of a deep red, variegated irregularly with white streaks, and spots of a red or blackish purple.

The *leaves*, *stalks*, and *flowers*, have a peculiar fœtid smell, like mice, which at some times is in the highest degree; at others so little, even in the same plant, as scarcely to be perceptible, unless when rubbed between the fin-

gers. The hemlock, though genuine, which has not this smell, must not be taken, as being less efficacious. This plant is common about the sides of fields, under hedges, and in moist shady places, and flowers in June and July. Hemlock is sometimes applied externally as a discutient. It has been generally accounted poisonous, which it doubtless is in a high degree to the human stomach: and it is said that pigs have also been destroyed by eating it; but the last is somewhat improbable.

**CINCHONA**, the bark of a tree which grows in Peru. It is the *cinchona officinalis*, or *cinchona panicula brachiata*, PERUVIAN BARK-TREE, OR rather CINCHONA OFFICINALIS, *foliis ellipticis subtis pubescentibus, corollæ limbo lanato*. Cl. PENTANDRIA, Ord. MONOGYNIA, Linn. Gen. Plant. 228. There are four sorts of this bark, viz. the reddish, yellowish, whitish, and the curling; the first two are the best, the curling is from young trees. Mr. Condamine says, that the tree is called *cascaquilla*, and is very different from the *quinquina*. By way of eminence it is called the **BARK**.

This bark is brought in pieces of different sizes, some rolled up in short thick quills, and others flat; the outside is brownish, and generally hath a whitish moss spread upon it; the inside is of a yellowish, reddish, or rusty iron colour. The best sort is bitter, resinous, breaks close and smooth, is friable betwixt the teeth, pulverises easily; when powdered, is of a cinnamon colour, but rather paler; and, according to the opinion of some, as the surest test of its goodness, it hath a musty kind of smell, and, at the same time, so much of the aromatic as not to be disagreeable. The inferior kinds, when broken, appear woody; and, in chewing, separate into fibres. That which is called female bark is redder in the inside; it is also thicker, and on the outside more white and smooth; is weaker to the smell and taste than the above, and, in medical virtue, greatly inferior.

The variety of human disorders in which the bark can be used to advantage seem to entitle it almost to the character of an universal medicine; in many diseases it is a sovereign remedy; and every practitioner, in proportion as his knowledge of its qualities increases, finds he can still employ it in a larger extent of cases. It is certainly a bitter and astringent, and has some degree of aromatic conjoined; but it is upon the two former qualities its power altogether depends as a tonic. With regard to its operation, it is indisputable that the state of the stomach is readily communicated to the rest of



the system both in men and horses: hence it may be discovered where this medicine is likely to be attended with advantage in its application, and where it may be hurtful. In all disorders where the bark is useful, other medicines of the astringent or bitter kinds, or combinations of them, have also been of service, though not equally with the bark, if it is given in substance; its virtue resides in the whole of its parts mixed together, none answering so well if separated. The bark is directed in the prescriptions of Mr. John Lawrence, Mr. Denny, Mr. St. Bel, and other modern veterinarians; and, with the same views, apparently, as in the treatment of human diseases.

**CIRCOCELE**, also called *varicocele*, *ramex varicosus*, and *hernia varicosa*; an irregular elastic tumour of the spermatic arteries and veins. Any large tumour in the abdomen of a male animal, or any external force pressing the veins, or a large tumour of the scrotum stretching the vessels, or impeding the return of the blood, may occasion the veins of the scrotum, or the spermatic veins, to be dilated with blood. In that case they will be here and there diversified with large and unequal knots, and the testicles will hang lower than in their natural state. But mostly this disorder depends on a relaxed state of the veins themselves.

**CIRCULATION**, in physiology, the conveyance of any fluid through its destined course to the point from which it set out. This term is applied, by way of eminence, to the motion of the blood in living animals. For the account of it in the horse, see the articles **BLOOD-VESSELS**, **HEART**, &c. According to Dr. Hunter, there are only three men who have any claim to the discovery of the circulation; viz. Servetus, Sefalpinus, and Harvey.

Servetus discovered the blood going from the right ventricle, by the pulmonary artery, to the lungs, where it was mixed with the inspiratory air, and returned by the veins to the left auricle, and so into the aorta. He traced the circulation through the lungs; but, like the old anatomists, he attributed the functions of the arteries to the veins.

Sefalpinus says, that the blood cannot be returned to the heart by the arteries of the valves, but by the veins, where the passage is open; but his ideas were confused and neglected. He observes, that the arteries and veins come from the heart. He improves greatly upon Columbus, who, in 1559, described the circulation through the heart and lungs. Thus improving on Servetus, he shows the use of the valves; but still abides in the track of the old ana-

tomists. He does not carry the circulation from the aorta to the vena cava; but he says, the blood cannot return by the arteries, and that it passes through the veins. He imagines that the blood is in the arteries whilst we are awake, and, being received into the veins by their anastomosing with the arteries, is returned to the heart whilst we are asleep. Here is the circulation completed so far as that one could not well read it without being struck with the notion, and almost convinced of the truth of it. But his account is so jumbled with the notions of the ancients, and in other parts of his works he speaks so contrary to this, that one would really imagine he did not thoroughly understand what he there advanced.

Harvey led to the discovery in full by a treatise on the Valves of the Veins, in the beginning of the seventeenth century. When he first published his History of the Circulation, its novelty and merit drew upon him the envy of the most learned men in Europe, who accordingly opposed him; but afterwards, incapable of arguing against truth, they strove to rob him of the discovery, alleging that it was known to Hippocrates; but this will not bear a controversy.

Dr. Shebbeare has observed, that, during the dilatation of the heart, when the blood enters the ventricles, the coronary arteries receive that fluid, contrary to all the other arteries of the body, and thus supply the body of the heart with the blood; and perhaps this blood is partly the cause of the vital heat being attracted stronger into the heart by the nerves at that time than at any other; though there is another reason for its passing at this time rather than at any other, viz. the passage of the blood is freer through the arteries during the heart's inflation than at the contraction, because those vessels then approach nearer the direction of a straight line. That the heart is not the one and sole cause of circulation appears, because the arteries all perform their diastole at the same instant, in healthy people. If the heart's propelling the blood were the sole cause of the circulation, the pulsation of the artery would be an undulation, and in different parts it would be perceived at different times, as the impress at different distances of the artery from the heart would be in succession.

That some other power than the velocity of the blood dilates the capillary arteries, to give passage to the globules, seems evident also from the experiments of Dr. Hales. He poured water into the aorta and other arteries of dogs; and though the water is so much more limpid a

fluid than the blood, and its force and velocity equal to that given to the blood by the heart, yet it never passed by the anastomoses of the arteries and veins, but through the sides of the arteries; and this seems to prove, that the arteries are totally stopped by the contraction of their fibres after the vital fire no longer continues to act, and that the force of the heart hath not a power equal to what is required to dilate them. Besides, it should be remembered, that this acts momentarily in all the distances in which it hitherto hath been tried.

The cause of the great velocity of the blood's motion is distributed to the whole arterial tube; and the heart in the human subject, instead of moving a weight equal to more than that of the blood, in this way, impels no more than about two ounces, the quantity supposed to be contained by the ventricle in each diastole. See *Animalis Motus*, also *Haller's Physiology*, lect. iv. and *Berdee on the Circulation of the Blood*.

Both in the human and brute fœtus, the circulation of the blood has some peculiarities different from what is observed in adults. 1st, The blood does not all pass through the lungs; a very small part only each time that it returns to the heart. 2dly, The blood brought by the two venæ cavæ into the right auricle of the heart passes chiefly into the right ventricle, but not entirely; for some portion goes immediately through the foramen ovale into the left auricle, and especially that brought up by the cava inferior. Suppose then two thirds of the blood got into the right ventricle, in order to pass along the pulmonary artery, yet all the blood that flows into it in the fœtus will not circulate through the lungs; for a considerable part must necessarily pass by the ductus arteriosus, directly to the aorta, before it hath arrived at the lungs; so that probably not above one third of the blood circulates through the lungs every time it is brought back to the heart. That blood which was thrown out directly from the right to the left auricle goes thence to the left ventricle, and so on to the aorta, without touching at either the right ventricle or pulmonary artery, and consequently not coming to the lungs. In some little time after birth, the foramen ovale becomes closed up in most subjects, though in some instances it is found to continue more or less open during the whole of life.

**CLARIFICATION.** See **DEPURATION**.

**CLAVICLES.** See **BONES**.

**CLINICAL**, *Clinicus* (from κλινη, a bed), a term applied to patients who keep their beds. Hence a *clinical* physician is one who attends the sick whose diseases confine them to their

beds. *Clinical* lectures are those given at the patient's bed-side, &c.

**CLITORIS** (κλειτορίς) is a long and round body in the fore-part of the vulva, naturally about the bigness of the uvula; it lies within the skin, nor does any part of it appear outwardly except its extremity, which is covered with a folding of the skin, made by the union of the nymphæ, called its *præputium*. This is the case in the human female, and it obtains also in many quadrupeds.

**CLONIC SPASM.** In a morbid state, the contractions of the muscles, or of the muscular fibres, are involuntary, and are excited by unusual and unnatural causes. When the contractions are succeeded by a relaxation, but, at the same time, are repeated without the concurrence of the will, or the repetition of natural causes, and are, at the same time, repeated more frequently, and commonly more violently, than in a healthy state. This state of morbid contraction hath been named *clonic spasm*, and is what we name strictly a *convulsion*.

**CLOACA** (*quasi colluaca*, from *colluo*, to cleanse), a jakes. In comparative anatomy it imports the canal in birds through which the egg descends from the ovary in its exit. In this it is remarkable, that the part which is next the ovary is jagged like the morsus diaboli, and fluctuates in the abdomen without any attachment to the ovary; hence anatomists have been puzzled to comprehend by what means the egg falls into it.

**CLOTHING.** In the use of this article more attention is perhaps required than those to whom the care of horses is intrusted are aware of. The practice of excessive clothing is but too prevalent, and lays the foundation of many diseases which are ascribed to very different causes. When a horse has stood a considerable time in a warm stable, abundantly covered, and almost concealed in his clothing, the circulation is particularly determined to the skin; the cutaneous pores are universally thrown open, and his situation resembles that of a man sleeping in blankets. In the meanwhile the animal is required for the road or the field; he is suddenly brought forth, as it were, in a state of nudity, into a cold and piercing air (for even in mild weather, in such a state, the atmosphere would be chilling), and the consequences are invariably a staring of the coat, a total stoppage of the channels of insensible perspiration, and a speedy revulsion of their contents to the internal cavities: hence colic, inflammation of the different viscera, and a long train of disorders. The practice of using the same propor-



tion of clothing to all horses is but too common; and is exceedingly injudicious: the quantity ought to be regulated by the temperature of the stable, the season of the year, and the state of the animal's coat, which, when about to be changed, demands more than usual warmth. Horses coming from the stables of the dealers often require much clothing; but the quantity may afterwards be gradually diminished. Previously to horses being sent to graze, care ought to be taken, during the foregoing three or four weeks, that the quantity of clothing is by degrees lessened; and, for the last seven or eight days, he should stand entirely without it: when taken up, it should be as gradually applied and augmented. Horses undergoing the operations of purgative, mercurial, or alterative medicines, undoubtedly stand in need of more covering than may be usual.

CLYSTER, a liquid medicine injected by the anus of an animal, with the assistance of a suitable apparatus.

"Clysters administered to horses," says Mr. Clark, "are of greater importance in relieving them from many acute complaints than is generally imagined; and it were to be wished, that, in place of the more expensive cordial drenches, &c. which are but too frequently given in most of these cases, a simple clyster of warm water, or thin water-gruel, were substituted in their stead; the latter of which would prove of great benefit, whilst the former too frequently proves hurtful.

"Clysters serve not only to evacuate the contents of the intestines, but also to convey very powerful medicines into the system, when perhaps it is not practicable to do it by the mouth; for, although clysters are only conveyed into the larger intestines, and, perhaps, hardly penetrate into the smaller, still they are extremely useful, by fomenting as it were the latter, and, at the same time, by softening the hardened excrement that is accumulated in the former, and rendering it so soft as to be expelled out of the body, by which flatulencies, or other offending matters, that may be pent up in them, are likewise expelled; besides, by their warmth and relaxing powers, they act as a fomentation to the bowels; and hence may be of considerable service in removing spasmodic constrictions in the bowels, carrying off flatulencies, and in preventing inflammation in the intestines, &c.; or, by conveying opiates to the parts affected, give speedy relief in colics, &c.

"The use of emollient clysters in *fevers* is considerable: they act by revulsion, and relieve the head when too much affected; besides, by

throwing in a quantity of diluting liquor into the intestines, it not only relaxes and cleanses them, but may be said to cool the body in general; at the same time, a considerable portion of the liquid is absorbed, and conveyed into the mass of blood, by which means it is diluted; and, in particular complaints of the bowels, clysters give almost immediate relief. These remedies, when judiciously prescribed, pass directly to the parts affected, as they undergo little or no alteration from the powers of the body."

Mr. Clark further observes, that, as the diseases of horses are cured on nearly the same principles as those of the human body, the doctrines laid down by physicians for the cure of diseases in the latter are applicable to horses in similar circumstances; only it ought to be observed, for obvious reasons, that the intestines of horses should always be emptied of dung by the repetition of clysters, which have something stimulating in their composition, *previous* to the administering any particular medicine by way of clyster.

"Nor," continues he, "is the use of clysters confined to medicines only; *food* and *nourishment* may be conveyed into the system in this way, when a horse is unable to swallow any thing by the mouth. This I have frequently experienced in practice, and supported horses for several days together by nourishing clysters, made of thick water-gruel, during violent inflammations or tumours in the throat, till such time as they have been discussed or suppured." The lacteal vessels, whose mouths open into the inner cavity of the intestines, absorb or drink up the chyle or nourishment that is produced from the food that has been digested, and convey it into the mass of blood. The same process takes place when nourishment is conveyed into the intestines by the anus or fundament, only the food requires to be so far prepared, broken down, and diluted with water, as to render it fit to be absorbed by the vessels mentioned above.

In administering clysters, it ought always to be observed, that the contents of the clyster be neither too hot nor too cold, and only milk-warm, as either of these extremes will surprise the horse, and cause him to eject or throw it out before it has had time to have any effect. Previous to introducing the clyster-pipe, the operator, after anointing his hand and arm with oil, butter, or hogs' lard (observing, at the same time, that the nails of his fingers are short), may introduce it into the rectum, and draw out the hardened dung gradually. This

operation, in farriery, is termed *raking*, or *back-raking*, and becomes the more necessary, as it frequently happens that great quantities of hardened dung are collected in the rectum, and which, in some cases, the horse cannot void easily without assistance of this kind.

The composition of clysters (as Mr. Clark very properly observes) should be *extremely simple*. On that account they will be easily prepared, and as easily administered, if the operator is provided with a suitable instrument for the purpose. The generality of clyster-pipes that are commonly used are by far too small and too short: although it may appear a kind of paradox, yet it is a fact, that a clyster-pipe of a larger size than the ordinary ones, and of a proper thickness, is much easier introduced into the anus than one that is considerably smaller. It is likewise obvious, that, when the pipe is too short, it renders clysters of no use, because it cannot convey them so far up into the intestines as is necessary to give them any chance of being retained: a small short pipe, of six or eight inches long, is not capable of conveying the injection to the end of the rectum, which, in a horse of a middle size, is about sixteen or eighteen inches long. In giving injections with these short pipes, the clyster is apt to flow out at the anus, in proportion to the force with which it is injected from the bag or syringe; and this must always be the case, especially if the horse's bladder should happen at the time to be full of urine, which frequently occurs from its being retained there by the hardened dung in the rectum, which presses the neck of the bladder, and thus prevents the horse from staling.

It happens farther, that, after the hardened dung is taken out of the rectum by the operation above mentioned, the bladder, being distended and full of urine, cannot exert its contracting power immediately, so as to expel its contents. It therefore presses up the empty rectum, and forms, as it were, a kind of tumour in it; and, if the pipe is too short, it cannot reach beyond this rising in the rectum, which forms, as it were, a declivity back towards the anus; and hence the liquor flows back as soon as it is discharged from the pipe, instead of passing forward.

The smallness of the bag or bladder containing the clyster, which is generally proportioned to that of the pipe, is another very material objection to this small apparatus, as it seldom contains one quart of liquid; from which circumstance very little benefit can be derived from the use of clysters in such large intestines as those of a horse. Dr. Bracken, in his first volume, has

this very judicious remark on the use of clysters: He observes, that "the colon of a horse seems to be three guts, by reason of the two necks of about half a yard each, drawn up into many cells or purses, by means of two ligaments, one of which runs along the upper, and the other the under side of it, which, with the assistance of a valve or flap at its beginning, hinder the excrements either from returning back into the small guts, or falling too soon downwards, before the chyle or milky substance prepared from the food be taken into its proper vessels. And, indeed, the cæcum, or blind gut, which is the first of the three larger guts, seems to be so contrived, in the manner of a valve, to hinder the aliment and chyle from passing too soon into the colon; for, if the aliment and chyle were not in some measure hindered in their passage through these large guts, the body could not be sufficiently supplied with nourishment.

The first of these colons is about a yard and a half in length, the second about a yard, and the third, or that part which joins the rectum, near six yards, in length; so that the colon of a horse fourteen hands high may be said to be nearly eight yards and a half long; and, from it, along the rectum or straight gut, to the anus, where the excrements are discharged, is not above half a yard; so that it is plain, clysters operate mostly in the colon, though generally they are given in too small quantities; for what signifies two quarts of liquor in a gut nine yards long, and four or five inches diameter, in a natural state? but, in a colic, it is so distended with flatulencies, that its diameter exceeds seven or eight inches, as Mr. Clark has observed in those dying of that distemper.

Large metal syringes are frequently used for the purpose of giving clysters; but, of all the instruments ever invented, Mr. Clark thinks, these are the most improper for horses. The shortness and smallness of their ivory pipes are not only a material objection, as has been observed, but they are apt to tear and wound the gut; for, if a horse should prove restless, either from pain, as in cases of the gripes, or from viciousness, the syringe and pipe being quite inflexible, in the struggle to throw up the injection, the gut may be wounded, by which a discharge of blood and other bad consequences may follow. But, although there were not the least chance either of their hurting the horse or wounding the gut, yet the force with which they throw up the liquor always causes a surprise, and of course a resistance, attended with a vigorous effort to throw it out, which indeed frequently happens before the pipe of the sy-



ringe is withdrawn, and frequently upon the operator.

The instrument Mr. Clark prefers, for the purpose of giving clysters, is a simple bag or ox-bladder, which will hold two or three quarts, tied to the end of a wooden pipe about fourteen or fifteen inches long, one inch and a half diameter where the bag is tied, and becoming gradually taper to the extremity, where the thickness should suddenly increase, and be rounded off at the point as smooth as possible. The hole through the pipe may be made sufficiently large, so as to admit the end of a common funnel, for pouring in the liquor into the bag. By the flexibility of the bladder at the end of this instrument, no danger can happen to the horse; whilst the clyster is conveyed so far up into the intestines that it will be retained. It causes no surprise (provided the liquor be *neither too hot nor too cold*, but about the warmth of the intestines themselves), as no other force is required to throw it up than the holding the bag a little higher than the level of the pipe; by which means the liquor flows gently into the gut, without any surprise to the horse. After using the bag, it may be blown full of wind, a cork put into the pipe, and hung up in some dry place, to prevent it from rotting; by which means it will be fit for use on future occasions.

Clysters are distinguished by different names, which denominate the quality of the ingredients of which they are composed, as emollient, laxative, diuretic, anodyne, &c. As the more general use of clysters, in the practice of farriery, would be attended with the most salutary effects, especially in acute diseases, where the speediest assistance is necessary, Mr. Clark subjoins the following forms for composing them, together with the cases in which they may be administered with advantage.

#### EMOLLIENT CLYSTER.

Take of thin water-gruel, two or three quarts;  
Olive oil,  
Coarse sugar, of each six ounces.

Dissolve the sugar in the water-gruel, then add the olive oil.

#### LAXATIVE CLYSTER.

Take of thin water-gruel, two or three quarts;  
Glauber's salt, eight ounces;  
Olive oil, six ounces.

When Glauber's salt is not at hand, common salt may be used in its stead.—A great variety

of recipes might be added for making clysters, composed of the infusion of different herbs, seeds, &c.; but, as the above ingredients are always easily got, they will be found to answer all the intentions required under this head, which is to soften the hardened excrements, to lubricate the intestines, and, by exciting a gentle stimulus, promote a free discharge of their contents, which, when once obtained, seldom fail of giving relief in inflammatory cases, spasms, &c.

#### PURGING CLYSTER.

Take two ounces of fenna;  
Two quarts of boiling water;  
Infuse the fenna, and having strained the liquor off, then add  
Syrup of buckthorn,  
Common oil, of each four ounces.

This clyster will operate more briskly than the former; and, on that account, may be preferred when an immediate or speedy discharge is necessary.

#### ANODYNE CLYSTER.

Take of the jelly of common starch, or of an infusion of linseed, one pint;  
Tincture of opium, one ounce, or about two table-spoonfuls.

When there is reason to apprehend inflammation in the bowels, solid opium may be given in place of the tincture, from twenty to thirty grains, in proportion to the urgency of the symptoms. It ought, however, to be well triturated or rubbed in a mortar, with a little of the liquid, till it is thoroughly dissolved. The smallness of the quantity of liquid here recommended, gives it the better chance of being the longer retained, as the good effects to be derived from the opium depend entirely on this circumstance. This clyster is proper to be given in violent gripings, attended with purging, in order to blunt the sharpness of the corroding humour, and to allay the pain usual in such cases. The starch will also in some measure supply the deficiency of the natural mucus, or covering of the intestines, which has been carried off by violent purging. It may be repeated, if the symptoms continue violent, only diminishing the quantity of laudanum, or of the opium.

#### NUTRITIVE CLYSTER.

Take of thick water-gruel, well boiled, three quarts.

When nourishing clysters are found necessary, they may be given four or five times in the day, according as circumstances may require. They are of considerable service in cases where the horse cannot eat sufficiently to support himself, nor swallow any thing, from inflammation of the throat, jaws, &c. or in convulsions, attended with a locked jaw, &c. Perhaps *milk-gruel* might be substituted with advantage.

#### DIURETIC CLYSTER.

Take of Venice turpentine, two ounces;  
Castile soap, one ounce.

Dissolve the soap in two quarts of warm water, then add the turpentine, previously well beaten up with the yolks of two eggs.

Mr. Clark says, this diuretic clyster is of great use in the strangury, and in obstructions of the urinary passages. As it is immediately applied to the parts affected, it seldom fails of giving relief, and has a much better effect, when prescribed in this manner, than when given by the mouth; because it then mixes with the whole mass of fluids, and may lose a considerable portion of its diuretic quality before it reaches the kidneys: but, by being administered in the form of a clyster, it is readily absorbed by the neighbouring vessels, and promotes a free discharge of urine.

It is unnecessary to multiply formulæ for clysters, which are given by most of the modern veterinary writers, and have each their share of excellence. We shall confine ourselves therefore to the following forms given by Mr. DENNY.

Take of Glauber's salt, four ounces;  
Decoction of linseed, three quarts;  
Olive oil, half a pint. Mix.

Take of Oatmeal-gruel, four quarts;  
Common salt, four ounces;  
Olive oil, half a pint. Mix.

Take of Oatmeal-gruel, four quarts;  
Barbadoes aloes, one ounce. Mix.

Mr. Clark observes, that there are many cases where clysters may be administered with great success, besides those already hinted at, as in inflammatory fevers, spasmodic constrictions, and colicky complaints in the bowels; in recent coughs, apoplexy, convulsions, paralytic complaints, swelling of the belly, whether from air or from hardened excrements. They are

required also in cases where horses are troubled with worms, as the ascarides, which lodge in the lower part of the intestines; or when bots are observed sticking in the anus, or voided with the dung; in very costive habits, before laxative or opening medicines are given by the mouth; in wounds which penetrate deep into the muscular or tendinous parts, or in the belly, &c.; in inflammation of the eyes, or when the head seems particularly affected; in inflammatory swellings on any part of the body. Clysters composed of mucilaginous substances, as starch, linseed, &c. are also of great benefit in violent diarrhoeas, whether proceeding from natural causes, or from too strong purging medicines given by ignorant farriers.

It ought always to be remembered, that clysters should be repeated frequently, till such time as the disorder for which they are given is either removed or greatly abated. This injunction may be the more readily complied with, as the administering clysters to horses is not attended either with much trouble to the operator, or disturbance to them.

Mr. Clark adds the following caution with regard to the operation of clysters: It frequently happens, in colics, and other complaints in the bowels, that a horse will dung frequently, probably from pain, &c. but in a very small quantity at once; at the same time, what he passes may appear somewhat soft or loose. In such cases, the practitioner may be told that clysters are unnecessary and superfluous: this, however, ought not to prevent him from prescribing them; as, in such cases, the flatulences which occasion the disorder may be seated in the colon, where the excrements at the same time are extremely hardened; and it frequently happens, that, after the second or third injection, they are discharged in such a quantity, and in such a state, as to surprise those who were just before opposing and deriding the practice recommended. These prejudices every practitioner will have to combat; for he will frequently have as troublesome nurses to deal with as the physicians sometimes complain of, and who are no less ready with their impertinent advice.

**COAGULANTS** (from *coagulo*, to *incrassate*, or *curdle*). In general such things as coagulate fluids; but in medicine it signifies more particularly such remedies or poisons as coagulate the blood and juices of an animal.

**COAGULATION**, that chemical change which takes place when a fluid, or some part of it, is rendered more or less solid. This is variously effected, and from the different me-



thods, as well as means, the appellations vary. Heat and cold are the two principal natural agents for coagulating fluids. Heat coagulates salts, by dissipating their moisture; cold coagulates water by freezing it; water coagulates camphor, if it is dissolved in spirit of wine; spirit of wine, if pure, coagulates the white of egg and other matters; and motion coagulates milk into butter.

**COAGULUM**, the curdled concretion formed by the mixture of two liquors; such as the curd for cheese, separated from the serous part of milk, by means of rennet infused in warm water, &c. It means also **RENNET** or **RUNNET**; and is the concreted milk found in the stomachs of sucking quadrupeds, which as yet have received no other nourishment than their mother's milk. In ruminating animals, which have several stomachs, it is generally found in the last, though sometimes in that which is contiguous.

If rennet is dried in the sun, and then close kept, it may be preserved in perfection for years. Not only the rennet itself, but also the stomach in which it is found, curdles milk, without any previous preparation. But the common method is, to take the inner membrane of a calf's stomach, clean it well, salt, and hang it up in brown paper: when this is used, the salt is washed off, then it is macerated in a little water during the night, and in the morning the infusion is poured into the milk to curdle it.

**COCULUS INDUS**, called also *coccule officinarum*, *cocci orientales*; **INDIAN BERRY**. It is a brown fruit, of the size of a very large pea; it is rough, brittle, and, when perfect, hath a white kernel. It is brought from Malabar and the East Indies, where it grows in clusters on a large tree called *natsiatam*. It is poisonous to the human subject, bringing on fainting and convulsions. The noxious quality resides in the kernel, and it operates both as an emetic and purgative. It is only used externally, made into ointment, or infused in water. It destroys Ice more effectually than the staves-acre, and may possibly be useful in the mange. Mixed with paste it stupefies fishes, so that they will lie on the water, and not attempt to escape from the hand that takes them. Condronchius wrote a treatise on these berries. Wepfer takes notice of several experiments made with them in his work *De Cicutâ Aquaticâ*.

**COCHLEA**. See **EAR**.

**COCHLEARE** (from *cochlea*, a *cockle*, whose shell its bowl represents), a **SPOON**; perhaps so called from resembling a shell. The ancients

had two kinds of cochlearia; the greater, which contained a dram, and the lesser, which contained a scruple. Various indeed are the accounts of the ancient cochlearia; but, in the present London and Edinburgh dispensatories, a cochleare is, of syrup half an ounce in weight, and of distilled waters three drachms in weight, by measure half an ounce.

**COCHLEARIA** (from *cochleare*, a *spoon*, because its leaves are like the bowl of a spoon), **SCURVY-GRASS**; a low plant, with thick juicy leaves, somewhat hollowed, so as to resemble a spoon, whence its name; those from the root standing on long pedicles, those on the stalk joined close to it without pedicles; producing toward the upper parts of the stalks small white tetrapetalous flowers, followed by roundish seed-vessels. It is annual, grows wild in several parts of England, particularly about the sea-coasts and salt-marshes, and flowers in May or sooner. In Greenland, and some other northern parts, it is mild, and totally destitute of pungency, and yet reckoned as effectual as that which grows with us.

**COCKAL-BONE**, in a horse; the same as **ASTRAGALUS**. See that article, and 3, 4, 5.—4, 5, 6, in Pl. V. with the description of the bones in the lower limbs, under **BONES OF THE HORSE**.

**COCTION** (from *coquo*, to *boil*), **BOILING**: also *decoctio*, *apozema*. The effect of boiling differs from that of infusion in some material particulars. In the heat of boiling water, the essential oils of vegetables, in which their virtue generally resides, are dissipated; and, when the medicine to be obtained is to consist of the more volatile parts of the ingredients, infusion is obviously preferable to decoction.

In decoctions, those ingredients should be boiled first from which their virtues are most difficultly extracted; and those which more readily give them out may be reserved until the latter end of the boiling; such volatile ones as hardly bear the heat of boiling water may be added when the decoction is removed from the fire; they may stand closely covered until the liquor is cool enough to be strained off.

Vegetable substances are the chief subjects of this operation, and such other materials as require some force to separate their parts. (See **DECOCTION**.) By the ancient writers on medicine this term had another appellation. By the *coction of humours* they meant the digestion of the aliment into chyle with the first coction; the reduction of the chyle into blood, which was the second; and the separation of the juices from the blood, by means of the glands,

they reckoned the third and last: but these terms are now obsolete.

**CÆLIAC ARTERY.** See **BLOOD-VESSELS.**

**COFFIN-BONE**, in a horse, is that which lies within the hoof, as in a coffin. It is round upwards, where it receives the little pastern, but grows broader and thinner towards its bottom; it is of a porous open texture, like a piece of loaf-sugar, and is easily pierced, and often wounded when horses happen to take up nails or other sharp things upon the road.

**COFFIN-JOINT**, is that which connects the pastern with the foot. See the articles **PASTER** and **FOOT.**

**COHOBATION**, the returning of a liquor distilled from any substance back again upon the same substance, and distilling it again, either with or without an addition of fresh ingredients. The alembic, called a pelican, was invented for the more easily effecting this operation. Modern chemists neglect it.

**COILING OF THE STUD**, a term once used by horsemen to denote the first making choice of a colt or young horse for any service. This, we are told, must by no means be done too early: for some horses show their best shape at two or three years old, and lose it at four: others not till five, nay, not till six; but then they do not fail to keep it. Some again will do their best day's work at six or seven years old, others not till eight or nine.

**COITION**, in beasts, the act of begetting their species. Custom has assigned different names to signify the same act in different animals. In the horse it is called **COVERING**, or, provincially, **LEAPING.**

**COLATURE** (from *colo*, to strain), any strained or filtered liquor. Thus decoctions of bark or herbs, after boiling, are passed through linen, to separate the liquid from the solid parts.

**COLCOTHAR**, or **COLCOTHAR OF VITRIOL**, an astringent powder frequently used by farriers as a topical remedy. It is made by exsiccating vitriol of iron (common green vitriol) in a pot or crucible, and afterwards carrying the heat so far as to convert it into a substance of a red colour.

**COLD.** See **CATARRH.** Most animals are subject to colds, and the treatment required is nearly the same in all cases, viz. warmth, venæsection, and diluents. Where the inflammation of the mucous membrane extends to the lungs, more vigorous measures are required: (see **INFLAMMATION OF THE LUNGS**). A cold is most commonly attended with coughing: (see the article **COUGH**). To what has been already said,

as the subject is of great importance, we may add the following remarks of Mr. John Lawrence as to the means of prevention.

"With regard to catching cold," says he, "horses domesticated, and men, are much upon an equality; so that it is very easy to judge from analogy in what circumstances and upon what occasions those animals are most liable to it. Some of the most common, and truly the most proper, causes of catarrh, are the following: new unaired stables, change of stable from warm to cold, doors or windows suddenly thrown open and continued so at unseasonable times, currents of air improperly admitted, exposure to the night-air, being suffered to stand still in the cold air immediately from a hot stable, or, when in a state of perspiration, the unnatural practice of washing horses in such a state with cold water at any season, sudden turning out to graze from warm keeping, damp body-cloths or saddle-pads.

"It is to the interest of every proprietor, however poor, to be provided with some kind of covering to throw over his horse's loins, on any sudden transition from heat to cold; it must also be remembered, that a horse which works and runs at grazs (in cold seasons more particularly) ought never to be curried, which renders his body too susceptible of impression from the air; such should only be rubbed with wisps. Should a horse take cold at grazs, it is infinitely better to house him by night, in a state of moderate warmth, and allow a few masches and warm water, from which treatment he will most probably be ready to brave the weather again, in a sound and healthy state, in the course of a few days, rather than suffer him to languish amidst the damps of the soil, with a running at the nose, which may continue for months. The usual objection to this practice is, that it induces a tender habit, which argument is also much used against clothing horses in colds; but I have always observed, that the animal body, under the influence of obstructed perspiration, is still more liable to an accession or increase of catarrh from that very account, and by no means so much so after the disease has subsided, and the vessels are less distended, which is an answer to the objection in both cases.

"Horses which are exposed to all weathers, but which have still caught cold, and yet cannot be spared from their constant duty, ought, on the first appearance of the disease, to have clothing allowed during their labour, to lose some blood, to have nitre in their water every night, and a cordial-ball-drink. This is the unfortunate description of horses which is de-



flined to undergo all the dreadful evils of neglected and accumulated catarrh—cough, pleurisy, asthma, yellows, rheumatism, glanders, consumption.”

“The common symptoms of a cold in a horse,” continues the same writer, “in its first stage, are well known—cough, discharge of lymph, or water from the eyes and nostrils, and occasionally hanging down the head. If attended to at first, as it ever ought in this land of rheums, at any rate in cold seasons, the disease will immediately submit; a few days’, or even a single day’s, warm treatment in the stable, a little additional clothing, warm water, and mashes, generally do the business: the vessels, being relieved from a superfluous load, will contract, and the horse will not be liable to relapse, on exposure to the air. Spirit, or salt of hartshorn, in warm ale, sweetened with syrup of poppies, given twice a-day, is an excellent medicine on the first attack of a cold; but great care ought to be had that the dose of hartshorn be not too large, lest it excoriate the throat of the horse, and choke him. Two or three table-spoonfuls of the spirit may be given for a dose, in a quart or three pints of beer: a proper judgment may be made by the taste of the drench. Or fresh ground ginger, from two to four drachms, is an excellent substitute for the hartshorn.

“Should the disease, either from neglect, the common cause, or sudden accident, be of a more confirmed and serious nature; should there be a considerable discharge from the nostrils, an inflammation of the glands under the jaws, attended with loss of appetite; medical aid must be called in, or the business may be very tedious, besides the risk of leaving in the constitution the seeds of certain of the most dangerous chronic diseases.”

“It is generally good practice to bleed at the commencement, which ought to be repeated in a few days, if fever and fulness of the vessels indicate the necessity. Give the following, in one or two balls, twice or thrice a-day, allowing plenty of warm gruel or white water, which should be poured down with the horn, if the horse refuse it.”

Take of Nitre,

Cream of Tartar, each one ounce;  
Juniper-berries, powdered, one ounce;  
Spanish liquorice, melted, half an ounce, or enough to sweeten with.

Work them up with liquorice-powder, or flour, into balls.

“This medicine may be given in gruel or ale, if a drink be preferred, and an addition made to the quantities, if required. In either of these methods, you are certain the horse has his medicine; which is by no means the case when you trust to infusions in his water, or to ingredients thrown upon or mixed with his mashes, which are frequently rejected and lost. Some horses also, with delicate stomachs, will not touch a mash in which any medicine has been mixed. There is, however, great inconvenience, and even danger, in forcing any medicine down a horse’s throat, when he is much troubled with a cough; and the utmost tenderness and precaution ought to be used. Observe that the cloths be not damp, or hard with dirt and sweat; in regular stables, clean washed cloths should be reserved for these occasions, or new made use of, well aired. Woollen cloth is a specific for opening the pores; the stimulus of the points of wool, according to Dr. Darwin, acting upon the skin. Should the throat be much swelled and inflamed, it will be necessary to keep the hood on in the stable; and the glands may be bathed well two or three times in the day with camphorated spirits, or spirit of hartshorn with a small quantity of oil. All possible attention should be paid to cleanliness, and straw kept in the manger to receive the discharge from the horse’s nose. No hay, or other food, should be suffered to remain and become tainted with his breath. In case of damp weather, or cold searching wind, the horse ought not to stir out of the stable; but, if fine, he may be walked out an hour, in the middle of the day, well clothed, and with his hood on.”

Mr. Lawrence very properly adds, that, in case of the fever running high, with violent heaving of the flanks, indicating great commotion of the blood, rattling in the throat, with loud strong cough, all cordial drenches, or balls compounded of hot seeds, ought to be avoided. Cooling, aperient, and diuretic drinks, similar to those already recommended, must be the dependence then; nor must the horse be overburthened with clothes. The giving hot spicy drenches in this case, he says, is a frequent error of common farriers.

COLD, EPIDEMICAL. See INFLUENZA.

COLD CHARGE. See CHARGE.

COLIC, or CHOLIC, from *colon*, the ancients supposing that intestine the seat of the disease. Colic is an affection of the intestinal canal, arising from a variety of causes, and attended with excruciating pain. It has usually been divided into two classes, the flatulent and the inflamma-

tory: the former is, perhaps, the complaint of the two most frequently met with. The flatulent colic may originate from the animal having been imprudently allowed, when hot, to drink cold water, or indeed water of any description in too large a quantity; also from eating food prone to fermentation, as new hay, or new oats or clover. It may arise also from the insensible perspiration having been suddenly checked, and speedily determined to the internal cavities. These causes produce an unusual accumulation of wind, and a painful expansion of the coats of the intestines. In this disease the horse appears restless, looks expressively towards the affected part, is ever changing his position, strikes his belly with his feet, lies down, rolls on his back, throws out his extremities wildly and violently, and suddenly rises again. The dimension of the abdomen is much enlarged; and the noise, owing to the motion of the wind contained therein is frequently very perceptible. Profuse sweats and cold shiverings alternately succeed each other: sometimes, when no longer able to struggle with the pain, the subject of it falls down, extends himself, and appears as if on the eve of death. If removed from the stable, and walked gently about, the severity of the symptoms will seem much alleviated; but, most probably, will be renewed in full force on the animal's return. In the first attacks of the colic, Mr. Taplin recommends the following ball to be repeatedly given, according to the state of the disease, every two, four, or six hours.

Take of Aniseeds in powder, one ounce;  
Mithridate, half an ounce;  
Ginger,  
Grains of paradise, of each, in powder, two drachms;  
Oil of aniseed,  
Oil of juniper, of each a drachm;  
Syrup, sufficient to form a ball.

If the above cannot be speedily procured, a mixture of ginger, pepper, aniseeds, &c. in the proportion of half an ounce of each, with a pint of strong beer, and the addition of a little brandy or gin, may sometimes be successfully substituted.

From frequent experience of its good effects, we recommend the following medicine in cases of flatulent colic: it may be administered every two, three, or four hours, according to the urgency of the symptoms.

Take of Venice turpentine, six drachms, or one ounce;  
Purified opium, from a drachm to a drachm and a half;  
Oil of aniseeds, one drachm;  
Ginger in powder, two drachms.

These articles may be formed into a ball, and the strength of it should be augmented by increasing the proportion of the more active materials, according to the judgment of the prescriber. In the mean while, clysters, composed of the decoction of chamomile, or other common herbs, or of the gruel of oatmeal, with half a pint of olive-oil, or an equal quantity of hogs-lard, and half a pound of common salt, should be occasionally injected tolerably warm. In all cases of flatulent colic, there is ever a greater or smaller degree of spasmodic affection, and opium will sometimes remove it, when all other medicines have been made use of without success. An open stable, with plentiful litter, and frequent and gentle motion, are required, if accessible. After the departure of the disease, the food of the horse should be light and sparing, until his health may be supposed perfectly established.

What has been commonly denominated the inflammatory colic arises from costiveness, and an accumulation of indurated faeces. This may be promoted by a want of proper exercise, or too much dry feeding. Many of the symptoms of flatulent colic are here attendant: but, when the horse with inflammatory colic lies down, he appears less restless, and seldom moves much about. He makes frequent painful and ineffectual attempts to expel the contents of the intestines; and as, from the fulness of the rectum, a considerable pressure is made on the neck of the bladder, he attempts to stale with no better success. The extremities are cold, the pulse full and quick, attended with a violent heaving of the flanks. In such cases it is advisable to use the most expeditious method of removing the obstruction within the intestines, and at the same time to endeavour to prevent, what may reasonably be apprehended, the existence of inflammation. The horse should be plentifully bled from a large orifice; his extremities may be rubbed with the spirit of hartshorn or of turpentine; and as aloes, from their stimulating quality, might here prove pernicious, half a pint of castor, or a pint of olive oil, may be given in a quart of common gruel, and occasionally repeated until they produce the proper effect. All pungent medicines must be avoided. The



clyster recommended in flatulent colic should be frequently used until plentiful evacuation has taken place, when immediate ease may be expected; and it will then be only necessary to attend to the diet of the animal, which must be light and sparing, and consist of thin gruel, bran mash, and sprinkled hay. Too much exercise or cold water will be prejudicial. The instructions for the treatment of intestinal inflammation and mortification may be found under their proper heads.

**COLLAR**, a part of the harness of a draught-horse, which encircles the neck, and bears upon the shoulders. It is made of canvas, stuffed with straw or wool, and covered with leather. Too little attention is sometimes paid to the construction of this article; and it often happens, that, owing to some roughness or inequality on its surface, or else to its want of nice adaptation to the parts of the animal, the pressure on him is unequal, and not only occasions constant pain in the performance of his labour, but rubs off the hair and skin, and produces blemishes at least, if not lameness. Humanity requires, no less than the interests of his owner, that these circumstances should be carefully attended to.

**COLLAR-BONE.** See **BONES**.

**COLLEGE, VETERINARY.** See **VETERINARY COLLEGE**.

**COLLUVIES**, filth, or the scourings of any corrupted animal substance. Used in a medical sense, it denotes any putrid or contaminated secretion or fluid.

**COLLYRIUM** (from *κολλω*, *glue*, and *ορρα*, *a tail*, because the ancient collyria were in the form of a rat's tail, and prepared of powders made up of something glutinous): according to some, from *κωλυω*, *to stop*, and *ροα*, *a running*; or from the Arabic term *kolera*. Suppositories, tents, and other things, have been called *collyria* from their form; but as they were used whole, or in their proper form, they were called *entire*; but what were called *collyria*, without the epithet *entire*, were powdered fine, and applied to the eyes.

At present a collyrium only means a topical medicine for the eyes, called *eye-water*. It differs not from a lotion; but, as applied to the eyes, it is now called a *collyrium*. Collyria made with decoctions from vegetables, or of salts that entirely dissolve, are more elegant, and agree better with the eyes, than when they are made with powders. See the article **EYE**.

**COLOCYNTH** (from *κολων*, *the colon*, and *κινω*, *moveo*; so called from its great purging

powers when exhibited in human diseases), **BITTER APPLE**. Also called *colocynthis medulla*, *coloquintida*; *bitter* or *wild gourd*. It is the dried pulpy part of a species of gourd; the *cucumis colocynthis*, or *cucumis foliis multifidis, pomosis, globosis, glabris*. Class **MONÆCIA**, Ord. **SYNGENESIA**. Linn. Gen. Plant. 1092: differing from the common sort only in the leaves being deeper jagged, and the fruit not eatable. It is brought from Aleppo, and grows in many parts of Turkey. It is very light, white, and of a fungous texture, composed as it were of membranaceous leaves, with a number of roundish seeds lodged in the cavities.

The seeds are unctuous and sweetish, like those of cucumbers, but not purging: the fungous medulla, freed from the seeds, is acrid, nauseous, and bitter to the taste, and is a strong irritating cathartic; some commend it also in lesser doses, as an alterative in chronical disorders of the human subject. In them, however, it is rarely used alone, since ten or twelve grains will purge violently, and frequently produce violent gripes, bloody discharges, &c.; hence, most commonly, it is mixed with other purgatives, to quicken their operation. Notwithstanding its extraordinary powers when applied to the human intestines, its effect on those of cattle is equivocal. Professor Coleman, indeed, denies that it is capable of purging horses, though so frequently employed (with other ingredients) for that purpose.

When boiled in water, it gives out a large quantity of slime; to proof spirit it does the same; the watery decoction, inspissated to an extract, purges briskly, but with less irritation than the colocynth itself, and half its weight. The best method of abating its virulence, without diminishing its purgative qualities, seems to be by triturating it with gummy farinaceous substances, or the oily seeds, by which means its resinous particles are prevented from adhering and sticking upon the membranes of the intestines, so as to irritate them.

**COLON.** See **ABDOMEN**.

**COLOSTRUM** (from *κολος*, *food*, or *καλλωμαι*, *to agglutinate*; either because it is the first food of the young, or from its being at that time particularly glutinous). The first milk of any animal, after bringing forth its young, is thus called; that from cows is also called *beestings*. It is gently cathartic, and purges off the meconium: thus it serves both as aliment and medicine.

**COLOUR OF HORSES.** It is a disputed point amongst veterinarians, even of the present day,

whether the colour of a horse, or of any other domestic quadruped, is any indication of excellence or of defect. The celebrated Gibson, whose experience and knowledge of the horse cannot well be disputed, observes, that not only much of the beauty of a horse depends upon his being well marked, and of a good colour, but also that his good or bad properties are sometimes denoted by his being of this or that colour, or his having such and such marks (see MARK). Though, indeed (he adds), these appearances are *not always to be depended on*, for daily experience teaches us, that, however true these observations may prove in the main, yet we often meet with good horses that are very ill marked, and of bad colours; and sometimes very bad horses that have almost all the beauty that colour and marks can give them. He concludes, however, that it is necessary for those who have any concern among horses to be more or less acquainted with such things: for this reason we shall here cite his opinions.

The chief and principal colours are the Bay, the Chestnut, the Black, the Brown, the Dappled Grey, and Sorrel. For the white is for the most part originally grey, which turns sooner or later into white, as his limbs happen to be lighter or darker; for the light grey colts, that grow the soonest white, have generally little or no dark mixture about their joints.

1. The *Bays*, perhaps so called from their resembling the colour of dried bay leaves, are of various degrees, from the lightest bay to the dark, that approaches the nearest to the brown, but always more shining and gay. The bright bay is an exceedingly beautiful colour; because a bright bay horse has often a reddish dash, with a gilded aspect, his mane and tail black, with a black or dark list down his back. Also the middle colours of bay have often the black list, with black mane and tail. And the dark bays have almost always their knees and pasterns black; and we meet with several sorts of bays that have their whole limbs black from their knees and hocks downwards. The bays that have no list down their backs are for the most part black over their reins, which goes off by an imperceptible gradation from dark to light towards the belly and flanks. Some of these incline to a brown, and are more or less dappled. The bay is one of the best colours, and horses of all the different kinds of bays are commonly good, except when accidents happen to spoil them while they are colts.

2. The true *Chestnut* is generally of one colour, without any shade or gradation: his hairs

light, the middle dark, and the points of a pale brown, which make an agreeable mixture, and differ from the sorrel in this, that the mixture of the chestnut is not so distinct and apparent to the eye, especially at any distance, because the hairs of the sorrel are often of several colours intermixed, wherein the red or fox colour generally predominates. Many chestnut horses have their manes and tails very near the colour of their bodies; many of them have but little white about their legs, and frequently no mark, whereas the sorrels have generally a good deal of white about their legs and pasterns; many of the sorrels have a large blaze, and not a few are bald all over the face, while their manes and tails are sandy or of a flaxen colour. Both the chestnut and sorrel are of degrees darker and lighter, and there are some chestnut horses with manes and tails as light as the sorrel, and the hair all over their bodies approaching towards a fallow colour, only with a sort of beautiful chestnut stain. There are many good and beautiful horses both of the chestnut and sorrel; but the latter, when they have much white about their limbs, are apt to be more faulty in their feet than those that are more uniform in colour, and they are also apt to be more tender in constitution. When a chestnut horse happens to be bald or party-coloured, or to have white legs, which may be owing to some extraordinary affection in the dam, or some improper mixture in the breed, such horses are not very agreeable, for chestnuts are the least tainted in their colour of any other, and most people prefer the chestnut to the sorrel, both in point of beauty and goodness.

3. The *Brown* is a colour not altogether so beautiful as the bay or chestnut. Horses have also their degrees, some being light, and some very dark. They have almost all black manes and tails, and often their joints are black, though not so shining as the bays, but rusty. Almost all brown horses grow gradually lighter towards their bellies and flanks, and many are light about their muzzles. The most beautiful are those that happen to be finely dappled; for the plain brown are esteemed more ordinary. Many of them are coarse, but strong and serviceable, fit for draught, for burden, or for the wars.

4. *Black* horses are very beautiful, especially when they are of a jet shining black and well marked, and have not too much white. For, as a great deal of white, especially when it spreads round the eyes, and a great way up their legs, adds nothing to their beauty, so neither does it add any thing to their goodness.



The English black horses have more white than the black horses of any other country. Gibson says, he knew many fine Spanish horses, some Arabs, and one Egyptian (the only one he ever saw of that country), all without any white. The Dutch and Danish horses seldom have much; though he thinks a star or blaze, and sometimes a white muzzle, and one or more of the feet tipped with white, beautiful, and no diminution to the goodness of a horse. On the contrary, some think these an addition, from an opinion that horses without mark are generally stubborn and ill-conditioned. Some black horses have brown muzzles, are brownish on their flanks and between their hips. These are often called black browns, as they are not a perfect black, but approach near to the colour of a tawny-black hound; some are of a lighter colour about their muzzles, and are called mealy-mouthed horses; and of this sort are the pigeon-eyed horses, which have a white circle round their eye-lids, and their fundaments often white. But, after all, he says he found many of the English black horses, especially of the largest breed, not so hardy as the bays and chestnuts, &c. Those that partake most of the brown are generally the strongest in constitution.

5. The *Greys* are so diversified in colour, and so common and well known, that it would be a needless labour to describe them particularly. The dappled greys are reckoned the best, and are to be found in most parts of the world. The silver-grey is extremely beautiful, and many of them very good. The iron-grey, with light mane and tail, have also a gay appearance, but are not accounted the most hardy. The light plain grey and the pigeon-coloured grey soon change and turn white, as all other greys do in process of time. The dappled grey keeps his first colour the longest, which is a sign of strength and durability. Some of them have become pretty old before they have changed, and never so perfectly as not to retain some vestiges of their native colour. The nutmeg-grey, where the dapples and other mixture participate of the bay or chestnut, is not only exceedingly beautiful, but most of the nutmeg-coloured horses turn out very hardy and good.

6. The *Roans* are a mixture of various colours, wherein the white predominates. Many of them turn out much better than they appear to be. Some are exceedingly good, and those that have a mixture of the bay or nutmeg-colour are sometimes tolerably handsome and beautiful. The roans have a general resemblance to each other, and yet a very great diversity: some are

strewn over with white as if they were powdered or dusted with flour, and some as if milk had been spilt all over their buttocks; others as if they were powdered with foot or lamp-black, and some as if their faces had been dipped in a bag of foot. Many of these are good road horses and hardy.

7. The *Strawberry* approaches pretty near the roan in some things, but in most resembles the sorrel, being often marked with white on his face and legs, which we seldom observe perfect without mixture on the roan. The bay mixture in the strawberry is also of the highest colour, and makes him look as if he was tintured with claret; some of this sort are both handsome and good, but not very common.

8. The *Fallow-colour*, the *Dun*, and the *Cream-colour*, have all one common resemblance, and most of them have a list down their backs, with their manes and tails black. The mouse-dun and lead-colour are the most ordinary; and, because the list down their backs goes off with a soft imperceptible shade, like what we observe on the back of an eel, are from thence called eel-backed. Few people choose dun horses, though horses of this colour often prove useful in the hands of country people. The fallow and cream-coloured horses are many of them both good and beautiful. Those are generally the best that, besides their manes and tails, have their muzzles and their joints black or chestnut, and their colour a little inclined to chestnut. Gibson asserts, that he has known some with manes and tails of a *silver* colour, not only extremely beautiful, but very good and useful. The fallow and tawny duns are often shaded with a darker colour, and sometimes faintly dappled, and look very fine in a set, when they happen to be well matched.

There are many other colours of horses produced out of the great diversity that are to be met with every-where, which would be endless and of no great use to describe, as the *Peach-colour*, *Starling*, and *Flea-bitten*, &c. and all these participate more or less of some of the colours already mentioned. Sometimes horses turn out very finely spotted, some like leopards or tigers, some like deer, with black, red, yellow, or other gay colours; and when these happen also to be comely in shape and appearance, they are generally reserved as presents for princes, or other great men, though perhaps more for their singularity than any superior excellence in them. Others again are so disagreeably diversified in their colours, and in such a remarkable manner, that they are usually condemned to the meanest drudgery.

Though we have stated the opinions of Gibbon on this subject at some length, we shall here add those of a more modern writer, as being somewhat in opposition to the former.

In his treatise on horses, Mr. John Lawrence adopts an adage of the noted Bracken, who says, that "a good horse is never of a bad colour." "Modern light and experience," says Mr. Lawrence, "have been happily employed in detecting and exploding the theoretic whimsies of antiquity upon almost all subjects; among the rest, upon that of attributing this or that good or evil quality or temperament to the colour of a horse. All that I am warranted in saying, from my own observation, is, that I have seen more bad horses of all kinds among the *light bays*, with *light-coloured legs and muzzle*, than amongst any other colours; and the most good saddle and coach horses among the common bays, with black legs and manes, and the chocolate browns. This, in all probability, has been accidental."

**COLT.** See **BREEDING.** Mr. John Lawrence's observations on this subject should not be omitted. He says, that, "in order to rear valuable stock, either for use or sale, it is necessary to give the colts corn immediately from weaning, and during every winter. It is also of the utmost consequence that they have good shelter from cold, wet, and storms, in hovels or out-houses, moderately littered down. Low keep and damp lying produce a poor and watery blood, and are by no means favourable to growth, or that plumpness of the muscles, which so materially conduces to substance, strength, and symmetry. A quarter peck of ground oats per day, with good hay, or even plenty of good oat-straw, is excellent keep the first winter for a colt. The only substitute for corn is fine pollard or carrots; of the latter a yearling will eat a peck per day, sliced thin. Foals should be weaned by the beginning of November, if the mare be in foal; if otherwise, they had better suck all the winter, the dam being high fed, and the foal sharing with her. A caution, however, is necessary to those who feed foals as if they intended to bacon them: of this description was that worthy old farmer of whom I have somewhere made honourable mention; he would sometimes feed a colt stone-blind by the time it reached its third year.

"It is of consequence to be remembered, that yearlings will frequently suck the mares, and very much injure the young foals. Foals are often griped by the milk, either on account of its being heated by the mare's labouring, or its

quality being affected by four and bad herbage. Warm masses of fine pollard and bran are in this case useful. If necessary, a small quantity of sulphur, magnesia, and honey, may be added. Sucklers are also occasionally liable to be hide-bound, dull, and inapt for motion. They will be sometimes colicive, then loose, the excrement scouring from them in small quantities. It arises, on most occasions, from the imperfect digestion of bad milk. Balls of fine rhubarb and magnesia, equal quantities, made up with honey and the sifted meal of oats, are the proper remedy, and must be used as necessity requires, until the colt be weaned. From two to four tea-spoonfuls make a dose, and care ought to be taken that the ball be not too large."

To this account Mr. Lawrence adds the following circumstance, as a caution against accidents which are much too frequent. "In April, 1789," says he, "I expected a Young Mark mare to foal every hour. The mare fed upon the common; and, from an improvident desire of saving a little grass, instead of committing her safe, at such a crisis, to a small paddock, according to the advice of persons of discretion, I suffered her to remain by night upon the common. I was called up one blustering and rainy morning, at four o'clock, and informed by a friendly labourer that my mare had foaled under shelter of a hedge, and that the foal had rolled into the ditch, and was drowned. It was at no great distance from the house, and we wheeled the foal home in a barrow. It was a fine colt foal, but stiff, and to all appearance had been suffocated with the mud and water. By way of experiment, I ordered the foal to be wrapped in a blanket, and laid before a good fire, and, by rubbing and chafing him for upwards of an hour, we at length recalled the vital principle, which had not really fled, but only remained in suspension. His mouth being now opened by degrees, a warm cordial of gruel, ale, and spice, was administered, and in a few hours he arose, with a little assistance; he was able to walk about, but had not yet strength to draw the mare's milk. She was brought to him occasionally, and he remained all night by the fire-side, a boy sitting up with him. The second day he was put into a loose stable with the mare; the third and fourth, he was suffered to go abroad with her a few hours in mid-day, and was brisk and well. On the fifth came a sharp north-east wind, and I saw the impropriety of turning the colt out, but the farrier would insist he could be no where so well as abroad with his mother. I



foolishly complied; and, being obliged to go to town, at my return found the colt had lain about the cold ground too long; the impression upon his tender and susceptible body was too forcible; he died in the night."

COLT-EVIL. See EVIL.

COLUMBO, COLUMBA, COLUMBOE, or, in the Portuguese language, *Raijs de Mofambique*. It is produced in Asia, from whence it was transplanted to Columbo, a town in the island of Ceylon, whence its name, and from whence all the East Indies are supplied with it.

It is brought into Europe in circular pieces of different sizes, up to three inches diameter; its sides are covered with a thick wrinkled bark, of a dark brown hue externally; when cut transversely, they exhibit a large central disk, with brown streaks, and yellow points. The root consists of three laminæ; viz. the cortical, which, in the larger pieces, is a quarter of an inch thick; the ligneous, which is about half an inch; and the medullary, which forms the middle, and is near an inch in diameter. This last is softer than the other parts, and, when chewed, seems to be very mucilaginous. Many small fibres run longitudinally through it. The cortical and ligneous parts are divided by a circular black line. It hath an aromatic smell, but is disagreeably bitter, and slightly pungent to the taste.

In the human subject it is almost a specific in the cholera morbus, nausea, vomiting, purging, diarrhoea, dysentery, bilious fever, indigestion, want of appetite, acidity in the primæ viæ, and most disorders of the stomach and bowels; but how far it is applicable to the purposes of veterinary practice remains to be ascertained.

COLUMNÆ CARNEÆ, small, long, and round, fleshy productions in the ventricles of the heart. See HEART.

COMA, *κωμα*, signifies a propensity to sleep, not unlike what is meant by a lethargy, which is not so aggravated with an entire loss of sensation as in a confirmed apoplexy.

COMARUM, marsh-cinquefoil, a genus in Linnæus's botany. He enumerates one species.

COMATA, an order in Cullen's Nosology, under the class *Neuroses*. In this are comprehended those affections which have generally been called *soporose* diseases; but (he says) they are most properly distinguished by their consisting in some interruption or suppression of the powers of sense and voluntary motion, or, of what are called the animal functions. These are usually suspended in the time of natural sleep; but, in all these diseases, sleep, or even the appearance of it, is not constantly a symptom.

COMMINUTION (from *comminuo*, to break in pieces), the reduction of any solid body into finer particles by any means whatever. It is of two kinds, viz. *confusion* or *pulverisation*, and *levigation* or *trituration*.

Subservient to pulverisation, where extremely fine powders are required, two secondary motions are necessary, viz. *searching* and *elutriation*: the first is the passing of any pounded matter through a sieve of a proper degree of fineness; the latter is by diffusing the powdered substance in a proper quantity of water, then decanting the liquor with the lightest part of the powder, &c.

In powdering any substance, care should be taken to accommodate the substance to the instruments: such things as will dissolve metal should be prepared in stone or glass mortars; very hard bodies will abrade soft marbles: to prevent then the mixture of the instruments made use of with the medicine that is prepared by them, such mortars, stones for levigating on, &c. must be chosen as cannot be affected by the uses they are employed in.

Light dry substances, resins, roots of a tenacious texture, are more easily pulverised if the mortar is previously rubbed with oil; camphor and cortex require a little water; tough substances may be grated or rasped; hard minerals, as flint, calamine stone, &c. should previously undergo an extinction, that is, should be made red-hot and then quenched in water; the alkaline and calcareous stones need not this process, for they would thereby be converted into lime.

Some metals, if heated to a proper degree, are rendered brittle, and then by agitation are easily powdered: of this kind is tin. This comminution of metals is called *granulation*.

Simple as this pharmaceutic operation is, its importance is considerable in medicine. Resinous purgatives, when well triturated, are more easily soluble in the animal fluids, and operate more briskly with less irritation: antimony, finely powdered, discovers but little efficacy; but, exquisitely levigated, is a powerful alterative. Mercury, and many other medicines, owe their virtue to comminution.

Roots, and such other articles as consist of different parts, viz. a resinous, ligneous, &c. should be wholly powdered, and then the whole powdered substance should be well mixed together; for, without this precaution, one part will be too active, and another too inert.

In levigating, some fluid must be added to the levigated matter. Earthy, and other hard bodies, that are not soluble in water, must first

be finely powdered in a mortar, then levigated with water on a hard marble-stone, and afterwards dried on a chalk-stone.

**COMPARATIVE ANATOMY**; that kind of anatomy which considers the same parts of different animals with relation to that particular structure and formation most suited to the manner of living and necessities of every creature; as, in the comparative anatomy of stomachs, for instance, it is remarkable, that those creatures which have the opportunities of frequent feeding have their stomachs very small in comparison to some creatures of prey, which may probably be under a necessity of fasting for a great while, and therefore have stomachs large enough to hold food sufficient for a long time. See **ANATOMY**.

**COMPLICATION OF DISEASES**, is when an animal labours under many distempers at a time, and more especially if they have any affinity to one another; as the dropsy, asthma, and jaundice, or the like, which frequently happen together.

**CONCENTRATION** is a crowding together any fluid matter into as close a form as it is capable of; or bringing together into as close a contact as possible any separate particles: but the generality who make use of this term have a very vague idea of it. Concentration is performed by various chemical processes.

**CONCEPTACULUM**, or **CONCEPTACLE**, in botany, is a pericarpium of a single valve, which opens on one side lengthways, and has not the seeds fastened to it.

**CONCEPTION**. The great and many difficulties which attend the most plausible account of the first formation of the parts of an animal, and beginning of motion in its fluids, and the curious observations of many persons, have been sufficient motives to most of late years to throw off the notion of equivocal generation. But though reason and experience convince us that all the parts of an animal did exist, and its fluids were in motion, before generation, yet, whether the animalcule was lodged in the seed of the male, or the female ova, is matter of controversy. But the arguments on both sides leave this without question, that the female ovum is a proper nidus for the animalcule in the male seed. There are such a prodigious number of little creatures, like so many tadpoles, swimming every way in the male sperm of all animals, as to excite our wonder. Nor is it less curious to observe their languid motion in such as are tainted with disease of the genitals, and how they recover their former briskness as the distemper abates. These animals are so

small as to be computed that 3,000,000,000 of them are not equal to one grain of sand, whose diameter is but the  $\frac{1}{100}$  of an inch. Whilst the seed thus abounds with animalcules, there are not the least rudiments of an animal to be seen in any part of the ovaria; yet these likewise have a principal part in generation, for without them there is no conception, and even bitches that have been spayed forget their usual appetites, as if these were the only spurs to venery. The yellow substance which grows in the ovaria of cows is very remarkable: it has a small dent, and a cicatrice in its middle, as if the ovum had dropped out there, according to Malpighi. When the fœtus is very small, this is very large; but, as the fœtus grows bigger and bigger, this decays, and at last vanishes; nor is it to be seen before conception, and in one testicle only when there is but one calf. If all the animalcules, as a great many of them do, fasten and grow to the womb till such time as, by their bigness or want of nourishment, they make one another drop off, women would not be sensible of their evacuation, for they must be falling off through the whole time of their being with child. But, when the animalcule gets into an ovum fit to receive it, and this falls through one of the tubæ Fallopianæ into the womb, the humours which distil through the vessels of the womb, penetrating the coats of the egg, swell and dilate it as the sap of the earth does seeds thrown into the ground; or else the branches of the veins and arteries whereby the egg was tied in the ovarium (which probably make the umbilical vessels), being broken, fasten with the vessels of the womb: then the placenta begins to appear like a little cloud upon one side of the external coat of the egg, and at the same time the spine of the embryo is grown so big as to be visible; and a little after the cerebrum and cerebellum appear like two small bladders, and the eyes next stand goggling out of the head; then the beating of the heart, or punctum saliens, is plainly to be seen, and the extremities discover themselves last of all.

**CONCOCTION** (from *concoquo*, to digest), a certain process or elaboration, supposed, by the physicians of the old school, to be wrought upon morbid matter by the power of nature or assistance of art, rendering it fit for separation and expulsion from the healthy fluids of animals labouring under diseases. But this doctrine, at least in fevers, is doubtful, if not false. That morbid matter passes off from the blood in a crude state, or in the state it was first formed in, appears from the matter of the small-pox and measles in the human subject, both which



are effectual in inoculating, in whatever state of the disease it is taken. And it is most probable that, in every infectious fever, the morbid matter, after assimilating some of the humours into its own nature, passes off in the same state that it was in when the body was first disordered by it. Farther, acrimony in the blood is not rendered mild by any process in our frame; on the contrary, it is always expelled by some of the excretories. And as to what is observed in pus, none of a kindly nature is formed whilst the heat of the body much exceeds the degree that is proper to health; but in its stead there is an ichor. Sydenham's notion of concoction was, that the concoction of the febrile matter means no more than a preparation and separation of the morbid from the sound particles.

**CONCRETION** (from *concreſco*, to grow together). In *chemistry* it is the condensation of any fluid substance into a more solid mass, importing the same as coagulation. In *veterinary surgery* it is the growing together of any parts which are separate in a natural state.

**CONCUSSION** (from *concutio*, to shake together), a jolt or shock of any part, by which its functions are impaired. *Concussions of the brain*, by blows or falls, are common to brute animals; and the circumstances attending them are, no doubt, somewhat analogous to such accidents in the human subject. A concussion of the brain is a sudden and violent motion of that and of the pia-mater, with such a sudden distension of their blood-vessels (occasioned by a determination of their contained blood, both arterial and venal, into one direction by the force of the accident) as occasions them to lose their power of propelling their contents as formerly, or of continuing the circulation of the blood as before.

It is often very difficult, when an accident from external violence happens to the inside of the head of an animal, to know of what kind it is, and where is its seat. In such circumstances we should consider the symptoms, how the misfortune happened, with any other circumstance that may throw light upon the case: sometimes the misfortune proves fatal only for want of knowing what part is injured.

The signs of a concussion do not always appear immediately after the injury is received. The symptoms attending a concussion are generally in proportion to the degree of violence which the brain itself has sustained, and which, indeed, is discoverable only by the symptoms. If the concussion be very great, all sense and power of motion are immediately abolished,

and death follows soon: but, between this degree and that slight confusion (or stunning as it is called) which attends most violences done to the head, there are many stages. Sometimes a concussion produces the same kind of oppressive symptoms as an extravasation, and the patient is either almost or totally bereft of sense; at other times no such symptoms attend.

A violent blow on the head, not beating the head to the ground, nor against any hard body, most frequently causes a fracture or fissure, with but small concussion: when a blow is given with such violence as to knock a horse down, and his head hits the ground, if the skull is not thereby broken, a concussion will be the consequence. If the head strikes against a hard immoveable body, in consequence of a fall from a considerable height, a concussion with an extravasation usually follows, and generally death is the consequence. A concussion of the brain seldom is attended, if ever, with extravasation, unless when re-action follows the blow. A concussion with a fracture is less dangerous than one with a fissure; because, in the first case, the extravasation is less.

To distinguish betwixt a concussion and extravasation on the brain is in cattle extremely difficult, if not impossible. To the scandal of human nature, instances are not wanting of brutal violence being purposely exercised on the heads of these unoffending animals. In such cases, or in similar effects from accident, if death do not supervene, copious bleeding, and the means directed generally in apoplexy (see **APOPLEXY**), should be resorted to.

**CONDENSATION**, is confining or driving any fluid into a less compass, in the same manner as explained under **CONCENTRATION**; but its usual signification is such a stoppage and collection of vapour as is made in the top of an alembic, whereby it is returned in the form of a liquid; or as is raised into a head or receiver, there to harden into a permanent and solid substance, as in sublimations of all kinds.

**CONDITION**, in the phraseology of the turf, a term supposed to imply a horse's being in such a state of perfection, and in strength and power so much above the purpose he is destined to, that he displays it in figure and appearance: according to Mr. Taplin, "fine in coat, firm in flesh, high in spirits, and fresh upon his legs." If the subject be a young horse, and stranger to hard work, he says, this may well be the case; but, on the contrary, where a horse has been much worked, either on the turf, field, or road, a great degree of good fortune must have attended him, if he have not suffered from some

one of the many dangers to which he has been exposed. "By way, therefore, of introducing directions for getting a horse into condition," says Mr. Taplin, "it will be most proper to fix the criterion of commencement at that season when a hunter, having had what is called a summer's run, is taken up with an intent to get him into *proper condition for the field*. The horse being taken up, if he is free from lameness, and there is no blemish, infirmity, or any other obstacle, to forbid such proceedings, put him first upon a very moderate proportion of hay and corn, and increase it gradually, according to the size and constitution. At the expiration of three or four days, when the hard food may naturally be supposed to have dislodged the grass, and supplied its place, a proportion of blood may be taken away, according to the size, state, strength, and temperament of the horse, with due attention to the flesh he may have gained, or the impurities he may have imbibed with his pasture."

In his Veterinary Pathology, Mr. Ryder recommends the following mild alterative powders for *promoting condition* in horses.

Take of Antimony, in fine powder, one pound;  
Nitre, twelve ounces:

Mix them together for use.

One ounce of this powder may be given every night and morning in the horse's corn, previously sprinkled with water, to make it adhere; or made into a ball with a little tar: this will be found very useful in promoting condition, or removing any long-continued coughs, colds, or discharge of matter from the nostrils.

CONDUCTOR, an instrument to put up into a sinus or fistula, to direct the knife in cutting it open.

CONDYLE (from *κονδυ*, an ancient cup, shaped like a joint), a knot or small round projection in any of the joints, formed by the epiphysis of a bone. In the human finger it is called the knuckle. In botany it signifies the joint of a plant.

CONDYLOMA (*κονδυλωμα*, from *κονδυλ*, *ḡ*, *digiti articulus*) is the knitting of the bones in articulation, as in those of the human fingers.

CONFECTION, may signify any composition (from *cum* and *facio*, to make up together); but it is generally applied to a particular sort of medicine compounded with dry ingredients of many kinds, powdered and made into the consistence of a thin electuary with honey or syrup.

CONFERVA, river weed, a genus in Linnaeus's botany, of the order of *Algas*, or *Thongs*. He enumerates twenty-one species.

CONFLUENT, flowing together, as do any liquors joining into a common stream; but this is generally used for eruptions which spread mutually, or run into one another.

CONFORMATION is used to express that particular make and construction which is peculiar to every individual; and hence a *mala conformatio* signifies some fault in the first rudiments, whereby an animal comes into the world crooked, or with some of the viscera or cavities unduly proportioned. Thus many human beings are subject to incurable asthmas, from too small a capacity of the thorax, and the like.

CONFORMATION, EXTERNAL, OF THE HORSE. As the powers and qualities of that useful animal are known to depend considerably on his external conformation, it is a point which has long and deeply interested the gentlemen of the turf, and others who have given their attention to the improvement of the breed. Of the few modern writers who have treated the subject scientifically, there is none, perhaps, more worthy of attention than Mr. Lawrence, of Birmingham, who, in his elegant publication, entitled *An Enquiry into the Structure and Animal Economy of the Horse*, makes the following remarks.—

"As deformity," says he, "is constituted by a want of harmony in the component parts, it will not be difficult to perceive, that a long head and a short neck, or a short head and a long neck, cannot be esteemed handsome.

"The neck should proceed in a line from the top of the head, forming a regular progressive curve to the withers. The trachea, or windpipe, should be large in diameter, and somewhat detached from the fleshy part of the neck. The size of its diameter has a considerable influence in respiration. Large windpipes are peculiar to blood-horses, whence, probably, they are better winded than all others. The chief beauty of the forehead depends on the union of the neck with the shoulders. The neck should issue high, and nearly in a line with the withers, and its lower part should enter the chest high, and above the point of the shoulders: the opposite conformation to this produces what is termed an ewe-neck, which can never be esteemed handsome.

"The shoulders constitute the centre of motion in the fore part of the body; and the extent and elasticity of that motion will depend chiefly on the position of the shoulder-blades. The connection of the shoulder-blades with the body is established by muscles only, independently of any joint whatever. It is by the alter-



nate contraction and extension of these different muscles that motion is produced, and it is by their united elasticity that the shock is broken when in action.

" This would not have been the case, had the shoulder terminated in a fixed joint. The truth of this remark may be ascertained by riding alternately on the withers and the croupe, and comparing the difference of their respective motions.

" As it is the office of the hinder quarters to propel the body forwards, it is necessary that they should be closely united with the body by means of joints. But, on the other hand, as the fore quarters are chiefly employed in sustaining the equilibrium of the machine, the concussion which must have been produced if they had been united to the body by joints would have been considerably greater than what is produced by their being attached by muscles only. In describing the action of the shoulder, it will be necessary to consider its position when in a state of immobility.

" The scapula, or blade-bone, is placed obliquely from the chest to the withers, and the centre of its action is fixed in the middle of it. In its action, it describes as large a portion of a circle as the extension of its muscles will admit. If this portion of a circle, for instance, be ten degrees, and two different scapulæ possess the same degree of extension, the one situated obliquely, the other perpendicularly, it must necessarily follow, that, acting on their respective centres, the one which is oblique must elevate its lower extremity higher than that which is perpendicular, and consequently will increase the projection of every part of the fore-limb. Hence it appears, that an oblique position of the shoulder is most favourable for progression.

" The shoulder may want liberty; either by being too fleshy or too lean. In the first instance, it is overloaded; and, in the last, it possesses not muscle sufficient to enable it to perform its functions with strength and celerity.

" The muscles of the chest contribute greatly to the motion of the lower part of the shoulder. Hence a strong and moderately full chest is to be preferred to one that is narrow and meagre. It will probably be urged, that horses are sometimes possessed of great speed whose forehands in no wise agree with this description; but such horses are generally endowed with particular powers in their hinder quarters. The fore quarters are merely passive, and extend themselves to receive the weight of the body;

and, if they are sufficiently strong for that purpose, the animal may certainly move with considerable velocity: but thence it is not to be inferred, that a greater velocity might not be produced, if both the fore and hinder quarters were alike perfect in their conformation.

" The fore legs will next come under consideration, on the good structure of which the safety and ease of the pace of the animal will chiefly depend.

" A horse, whose legs are twisted, or improperly placed too far under his body, may possess great speed; but that his action must be imperfect, the following reasons will sufficiently demonstrate:

" If the foot turns either inwards or outwards, it cannot alight flat on the ground, in which case the position can never be firm and steady; because the pressure will be partial on either the inward or outward quarter of the foot. If the leg is not perfectly straight from the shoulder to the foot, its action cannot be true, nor the center of gravity so readily found; as by one that is even and uniform in all its parts. If the elbow incline inwards close to the ribs, the leg must be thrown sideways when in action, which will remove the foot too far from the centre of gravity, and produce a lateral rolling motion, very unpleasant to the rider. Again, if the legs incline too much under the body, they will be overloaded, and the freedom of their action will be reduced in proportion as they are oppressed.

" The fore legs, to be perfect, should, in a front view, be widest at the chest, gradually approaching each other downwards towards the foot, and descending in a perpendicular direction to the ground.

" The upper part of the fore leg, next the shoulder, should be broad and muscular.

" The power of elevating the knee, and throwing the leg forwards, depends much on the size of the muscles in this part.

" The knee, in a front view, should be broad, flat, and square; the lower part of the limb, between the knee and the fetlock, should be short, flat, and wide in a lateral view. The tendons should be distinct, firm, and detached from the bone. The fetlock should correspond in proportion with the rest of the leg, neither too upright nor too sloping. If it is too long, its ability of sustaining the weight of the body will be diminished; and, if it is too short, it will be liable to knuckle over. Short pasterns are generally attended with contracted feet, the weight of the body not being thrown so much on the heel as is the case with long pasterns.

"The general proportion of the limb is constituted by two equal divisions, viz. from the elbow to the knee, and from the knee to the ground.

"The length of the fore leg should correspond with that of the hind leg; that is to say, the elbow should describe a horizontal line with the stifle, otherwise the harmony of motion is lost; as is the case in a carriage, where the fore wheels are of a smaller diameter than the hinder wheels, on which account they are obliged to perform three revolutions to two of the latter."

Mr. Lawrence goes on to speak of the figure of the body, or *carcase*, as it is usually called. His sentiments on this head will be found under the article *BODY*. For an account of the figure of the horse's foot, see *FOOT*.

Mr. St. Bel has taken considerable pains to ascertain, by geometrical rules, that form of the horse which is most conducive to *his speed*. For the remarks of that writer, see the article *PROPORTIONS*.

**CONGERIES** (from *congrego*, to gather together), is a collection or parcel of bodies gathered together into one mass or composition.

**CONGESTION**, the same as collection of matter, as in abscesses and tumors.

**CONGIUS** (quasi *CONGERUS*, from *congero*, to heap up), a gallon. This is a very ancient measure, and is generally said to have been equal to ten pints of wine, and nine of oil. The Athenian congius, or conchus, weighed nine pounds, and the Roman weighed ten, or contained ten Roman pints of wine. In the London and Edinburgh dispensaries the gallon is only eight pints.

**CONGLUTINATION** (from *cum*, together or with, and *gluten*, glue), is the uniting parts of the body together by means of their natural moisture, by the help of bandage, or by the supply of viscid particles; and, in the last acceptance, it differs little from accretion or nourishment.

**CONGLOBATE** (from *conglobo*, to gather singly into a ball). All the glands in an animal body are either conglobate or conglomerate. A conglobate gland is a little smooth body, wrapped up in a fine skin, by which it is separated from all other parts, only admitting an artery and a nerve to pass in, and giving way to a vein and excretory canal to pass out. Of this sort are the glands of the brain and the testis in many quadrupeds.

**CONGLOMERATE** (from *conglomerare*, to heap up together). A conglomerate gland is composed of many little conglobate glands all

tied together, and wrapped up in one common membrane. Sometimes all their excretory ducts unite, and make one common pipe, through which the liquor of all of them runs, as the pancreas and parotids do. Sometimes the ducts uniting form several pipes, which only communicate with one another by cross canals, and such are the mammae. Others again have several pipes, without any communication with one another; of which sort are the glandulae lacrymales and prostatae in the human subject: and there is another sort when each gland hath its own excretory duct, through which it transmits its liquor to a common basin, as in the kidneys.

**CONGRUITY**, is used to express that aptitude in some bodies to unite and incorporate, from a similitude or fitness of their figures; as incongruity is an unfitness of their surfaces to join together. Thus, quicksilver will unite with gold, and many other metals, but will roll off from wood, stone, glass, &c.; and water, that will wet salt and dissolve it, will slip off from tallow without adhering to it, as also from a dusty surface, and from the feathers of waterfowl. Two drops of water, or of mercury, will on contact immediately join and coalesce; but oil of tartar poured upon quicksilver, and spirit of wine on that oil, and oil of turpentine on that, and air over all, will remain in the same vessel without any manner of union or mixture with each other; and the cause of this is, that the figures of some bodies will not admit other bodies near enough to be within their spheres of attraction, whereby they cannot join and cohere: but where their fitness of figure will let them approach near enough to feel each other's attractive power, they close and hold together.

**CONIUM**. See *CICUTA*.

**CONJUNCTIVA TUNICA**. See *EYE*.

**CONSENT OF PARTS**, is that perception one part has of another at a distance, by means of some fibres and nerves which are common to them both, or communicated by other branches with one another: and thus, the stone in the bladder of a horse, by vellicating the fibres there, will affect and draw them so much into spasms, as to affect the coats of the bowels in the same manner, by the intermediation of nervous threads, and cause a colic there; and also extend their twitches sometimes so far as the stomach. The remedy, therefore, in such cases is to be addressed to the part originally affected, how remote and grievous soever may be the consequences and symptoms at a distance.



**CONSERVE.** Conservees are compositions of recent vegetable matters and sugar, beaten together into one uniform mass.

**CONSTIPATION,** and **CONSTRICTION** (from *constringo*, to bind together), is the binding up wounds, or closing the mouths of vessels so as to prevent any efflux of their contents. This term also denotes costiveness, not only when the alvine feces do not daily pass, but also when what is discharged by the anus is too hard to receive its form from the pressure of the rectum upon it.

**CONSTITUTION,** in physiology, that distribution or system of arrangement by means of which the particular functions of an animal body are carried on: that habit or temperament arising from the peculiar disposition and quality of its parts. The constitutions of brutes differ in fewer respects than those of men, yet a degree of attention is no less necessary to be paid by the veterinary practitioner to that circumstance than is usually done by the physician.

**CONSTRICTORES** (from the same derivation), are muscles of the nose, called also *depressores labii superioris*, depressors of the upper lip, which arise from the fourth bone of the upper jaw, immediately above the gum of the dentes incisores, and ascending are inserted into the roots of the alæ nasi, and superior parts of the upper lip; they draw the upper lip and alæ nasi downwards. There are also the

**CONSTRICTORES ALÆ NASI.** These rise fleshy below the root of the nares, immediately above the gums of the dentes incisorii, and ascending transversely are inserted into the coats of the alæ nasi, and the superior part of the upper lip, in the horse.

There are many other muscles which bear the name of *constrictors*: for these reference must be had to the article **MUSCLES**, and to the plates there referred to.

**CONSUMPTION.** That horses are subject to consumptions, and wasting disorders, must be manifest to all who have had any tolerable acquaintance with their diseases; though many are unable to distinguish a true consumption from an obstinate cold, or other disorder of the breast.

The cause of a consumption is frequently from colds that have never been thoroughly cured, but have left some chronic affection of the lungs, or some other of the principal viscera, especially of the parts contained within the chest. This results sometimes from violent inward strains, in working a horse beyond his strength, or when he has a cold upon him; travelling a horse beyond his strength; riding

long journeys without allowing sufficient food, or proper times of baiting and rest upon the road; riding in the night in damp and wet weather; and from other such-like errors: and sometimes consumptions proceed from weakness or other faults in the constitution; sometimes from pleurisies, surfeits, or long-continued sickness of any kind.

Gibson asserts, that fiery hot horses are the most subject to consumptions, being for the most part naturally weak and watery, and of a hectic disposition. These generally move with much heat and vigour for a spurt, but this soon abates; and if they happen to be worked at any time more than ordinary, they lose their appetite, they stale and dung often, for the most part lose their flesh, and look faint and jaded; a hectic fever often attends, so that they feel all over hot, though not to such a degree as in inflammatory and other fevers: but these symptoms generally wear off with two or three days' rest, and their appetite to food will also return, but they are apt to relapse as soon as they are put upon fresh exercise; and though they are never so much indulged with rest and food, they seldom carry much flesh.

When a consumption proceeds from any defect in the lungs or principal viscera, the eyes look dull and a little moist, the ears and feet are for the most part hot. There is commonly a sharp cough by fits, and frequently with a groaning, and the horse sneezes very much, has an uneasiness and quick motion in the flanks, often runs at the nose, and some consumptive horses throw out a yellowish curdled matter. They have but little appetite to food, especially to hay, but will eat their corn, and are for the most part hot after it. Sometimes these symptoms abate, and give hopes of recovery; but the least over-exercise, or error in feeding, brings them to their former state. Some look sleek and smooth, though their flesh be wasting; others have rough and staring coats, and appear also to be surfeited: but these different appearances are usually owing to the different causes from whence the distemper originates.

When a horse that has any of the above-mentioned symptoms retains a tolerable appetite to food, holds out a long while without any great abatement of his strength, or loss of flesh, it is always a good sign: on the contrary, when he continues losing his flesh and vigour, it is a sign of decay, even though he retains a tolerable appetite; and any such horse will seldom recover. When a yellowish or curdled discharge runs from the nose, the animal generally dies;

but if the matter be white and well digested, and at times abates, or changes to a clear water, it is a promising sign, especially if the horse be young: but, even where the best symptoms appear, consumptions of all kinds are dangerous and uncertain, and every accident or error exposes a consumptive horse to relapses; because his complaint is often owing to natural weakness.

As to the cure of consumptions, one of the principal things is bleeding, which should be small in quantity, but often repeated, especially in the beginning, before the horse loses too much of his flesh. This sometimes abates the hectic fever which usually attends consumption, and is a relief to the lungs. A pint at once, or a pint and a half from some horses, is sufficient; and this may be repeated as often as they appear to be more than ordinarily oppressed in breathing. All those things that are proper in colds are profitable here also. Gibson recommends the following balls, which, he says, will do service, if the horse be young.

Take of Conserve of red roses, one ounce;  
Lucatellus's balsam, half an ounce;  
Sperma ceti, in powder,  
Sal prunella, of each two drachms;  
Balsam of sulphur anisated, sufficient  
to make it into a ball; to be rolled  
in liquorice-powder or wheat-  
flour.

These balls may be given one every morning for a week; and if they be found to do service, may be continued during pleasure, till the horse recovers his usual vigour, and begins to gather strength. A quart of the decoction of bran or of linseed may also be administered after each ball, made warm, dissolving in it an ounce of gum arabic, or gum tragacanth; but if the horse scours, or runs at his nose, so as to induce weakness, the following infusion may be used:

Take of Ground-ivy,  
Horehound, of each a handful;  
Red rose leaves, half a handful;  
Linseed,  
Juice of liquorice, of each half an  
ounce;  
Gum tragacanth, an ounce.

Infuse these in a quart of boiling water, letting the infusion stand covered till cold.

Gibson directs this to be made milk-warm, and given every morning after the ball, with the usual precautions; that is, fasting two hours

before and two hours after, allowing him not above a quartern of scalded bran; for, when scalded bran is often given, and in great quantities, he says, it hurts the horse by relaxing too much, and is greatly injurious in all habitual weaknesses. His oats should be the hardest and sweetest that can be got, and his feeds also small, that he may not be cloyed. His hay should also be the finest, and the dust well shaken out of it, and given in small portions, that he may digest it easily. But nothing contributes more to the cure of a consumption than air and exercise, though any excess in the latter is dangerous; and therefore a weak consumptive horse should only be led, or ridden by a person of a light weight; and, if short-breathed, should only be walked. He should be continued in the air as much as possible, upon some dry common, or other place where the air is good, which is the most likely way to bring him to his stomach, and consequently to his strength; and, if he mends by this management, there may be some hopes of his recovery, provided he be young: but if he be full-aged or old, or if he continues still weak and faint, runs a viscid gleet from his nose, has a fulness of the glands under his jaws, coughs much and wastes in his flesh, and grows weak, with a stinking breath, it will not be worth while to bestow any labour or expence to save him.

Some young horses continue in this consumptive way for seven or eight months, with a great deal of care and good nursing, and; at some intervals, give the owners hopes of a recovery, but at last die emaciated. Others go off in a much shorter time, and not so much debilitated; and some recover that have had a running at the nose for two or three years together; but then this running has abated very much at times, the matter was always white, and, when that ceased at any time, there was generally a flow of clear or whitish water. Such horses will retain their appetite, and not lose their flesh, but go through their business tolerably well, with good usage; though, if they are put to it a little more than ordinary, they will be the worse for it: and persons who have had much practice this way may observe, that these horses seldom recover perfectly till they are about seven or eight years old; then their complaints go off, and some of them grow hardy and useful.

There is another kind of discharge from the nostrils described by Gibson. This, he says, happens when the strangles have never come to maturity, or have been opened before the imposthume was ripe. There is generally a profuse



running at both nostrils; and, when this continues, the horse grows extremely weak, loses his flesh, and at last his lungs are affected, and he becomes consumptive: but this is a curable case, and when it proves otherwise, it is generally owing to neglect or ignorance.

Of those horses that are of hot fiery tempers, and seem naturally disposed to hectic, few are of any great value; yet if any such happens to excel in his goings, the best way to preserve him is to feed him often, in small portions, not to overwork him, nor to suffer him to carry too great a weight. The spring grafs is also good for such horses, housing them at night, while the weather is cold: by such usage some of these have had their constitutions greatly mended, and become serviceable.

An *atrophy* is another kind of consumption to which horses are sometimes subject; where a horse has little or no cough, no running at the nose, nor scarce any symptoms of a hectic fever, eats his meat tolerably well, and yet continually wastes in his flesh, and grows at last very much hide-bound. This is a dangerous malady, and, for the most part, proceeds from a surfeit or hard usage, and sometimes ends in the farcy or glanders. Some gentlemen have been at great pains and expence in hopes of curing favourite horses that have been thus declining, though without effect; for, in many such cases, the glands of the mesentery, and other lymphatic glands, are very much enlarged; and as, when these are grown hard and schirrous, they hinder the chyle and lymph from mixing with the blood, the horse loses his proper nourishment, and therefore nothing can produce a cure in this case but what is of sufficient efficacy to remove the obstructions of the glands; and this must be attempted speedily, or not at all.

Therefore, before a horse is too far wasted, give him two drachms of calomel in any of the common horse-balls, in the morning before meat or water, letting him fast two or three hours after it. His food must be scalded bran and the sweetest hay, while he is under this course; he must have no cold water, nor be exposed to wet. The day after this dose of calomel, let him have a mild purging ball (see BALL.); for a horse in this state will not well bear those that are strong.

Gibson directs the mercurial ball and purge to be repeated three times, allowing a week between each. Then he advises the following:

Take of Cinnabar of antimony, one pound;  
Gum guaiacum, the same quantity.

Make these into fine powder, mix them well together, and give the horse an ounce twice a-day, wetting his feeds.

This may be taken in the intervals between the purges, and continued afterwards till he recovers and begins to gather strength; and then air and exercise may restore his health. Some horses are best cured with the spring grafs, especially when the complaint has not been of long standing. The salt marshes are the best, where the soil is the most open, and soon dry; but if a horse has been long in this declining way, he will require strengthening remedies (see RESTORATIVES); otherwise he will be apt to turn dropical upon his being taken up. See HIDE-BOUND.

CONTACT, or CONTIGUITY (from *contingo*, to touch together), the joining one surface to another without any interstice: and hence, because very few surfaces are capable of touching in all points, and the cohesion of bodies is in proportion to their contact, those bodies will stick fastest together which are capable of the closest contact.

CONTAGION (from the same derivation), the communicating or transferring a disease from one body to another, by certain steams or effluvia transmitted from the body of a diseased animal. Some diseases are thus propagated by an immediate contact or touch; as the madness of a dog, which is communicated by biting; as is the venom of the viper, and other reptiles. Of this nature also is the glanders in the horse. There are also some contagions transmitted through the air to a great distance, as in some pestilential distempers incident to horned cattle; in which cases the air is even thought to be full of contagious particles.

CONTINENT FEVER, or that fever which is continual, proceeds regularly in the same tenor, without either intermission or remission.

CONTINUED FEVER, that species of fever which is attended with exacerbations and slight remissions, but no intermission.

CONTRACTION (from *contraho*, to draw together) expresses the shrinking up of a muscle or fibre, when it is extended.

CONTRACTION OF THE HOOF, a distorted state of the horny substance of the hoof in cattle, producing all the mischiefs of unnatural and irregular pressure on the soft parts contained in it, and consequently a degree of lameness which can only be removed by removing the cause. Contraction of the hoof rarely happens, however, except to those animals whose hoofs, for the convenience of labour, are shod with iron.

Hence the importance of shoeing animals, particularly horses, on sound principles; an object to which great attention has been paid by the Professors at the Veterinary College. As the effects of the contracted hoof are exerted on the root, we refer to that article for the information required.

**CONTRACTILE**, the nature of a body which, when extended, has a property of drawing itself up again to that dimension it was in before extension. For the cause of this property, which is of the utmost consequence to a right understanding of the animal economy, see **FIBRE**.

**CONTRACTURE**, a rigidity of the joints. There are two species: one from rigidity in the muscles, which move the joints; another from the rigidity in the bones, or the ligaments of the joints.

**CONTRAHENTIA**, medicines which shorten and strengthen the fibres. Astringent medicines are those which do this.

**CONTRA-INDICATION**, an indication which forbids that to be done which the main scope of a disease points out at first.

**CONTRAYERVA**, the *Dorstenia Contrayerva* of Linnæus. It was brought into Europe about the year 1581, by Sir Francis Drake, whence it was also named *Drakena*. It is found in Peru, and other parts of the Spanish West Indies. The College have retained this root in their Pharmacopœia: it enters the pulvis contrayervæ compositus; but the instances of its use in veterinary practice are rare.

**CONTUSIONS**, or **BRUISES**. (See **BRUISES**.) When any part is bruised, one of these two following circumstances is always consequent, and commonly both happen together; either the small blood-vessels of the contused part are broken, and the blood they contained spread about in the adjoining parts; or else, without such an effusion of it, these vessels have lost their tone or active force, and, no longer contributing to the circulation, their contents stagnate. In either of these, if nature, with or without the assistance of art, does not remove the impediment, an inflammation comes on, followed by an imperfect unkindly suppuration, with putrefaction or gangrene. Beside which, there are peculiar symptoms from the injury done to a nerve, a blood-vessel, or a bone.

In general, the symptoms consequent on contusion may be reduced to three classes:

First, They arise either when the solids are destroyed, and the humour discharged; then those functions are abolished which depend upon a due and determinate motion of the fluids through the sound vessels.

Secondly, The discharged humours, collected either in the natural or præternatural cavities of the body, by their bulk and quantity, press upon the adjacent parts, and either totally destroy, or at least disturb, their respective functions.

Thirdly, The humours, thus discharged, may, by their continuance and stagnation in their cavities, acquire such a degree of acrimony as to corrode and destroy the adjacent parts.

Hence contusions on fleshy parts may produce suppuration, gangrene, palsy, or a contraction: on a large nerve, palsy, or insensibility, and a gangrene of the parts below the injured part; this particularly may follow contusions of the spine and its marrow. Contusions of the viscera are often speedily fatal, since a little force may burst their vessels.

Contusions from gun-shot wounds are not so dangerous from the destruction of the injured vessels, and the consequences thereof, as from the general concussion that the part suffers from the air which is violently impelled against it; and from this concussion it is that most of the grievous symptoms proceed which are consequent on wounds or bruises from musket-balls.

**CONVALESCENCE**, that interval between the departure of a disease and the recovery of the strength which was lost by it.

**CONVULSIONS**, those involuntary and alternate contractions of the fibres or muscles of an animal which arise through the medium of the nerves. Gibson, referring all convulsive affections to the brain, includes, in his chapter on that subject, tetanus, worms, ulcerations of the viscera, costiveness, &c.; an arrangement by no means according with modern theories.

When convulsions attack only particular parts, they are often attended with some kind of paralysis at the same time, by which means the affected parts are alternately convulsed and relaxed. A permanent convulsion, or unnatural contraction of particular muscles, is called a **SPASM**, or **CRAMP**. These partial convulsions may attack almost any part of the body of an animal, and are not unfrequently symptomatic in fevers, worms, &c. The involuntary startings of the tendons in acute diseases are all of them convulsive disorders. Convulsions, even when most generally extended, differ from epilepsy in not being attended with any abolition of sense, and in not being followed by the same torpid state.

Convulsions, not only of particular parts, but also over the whole body, often take place



from causes not very evident. Sometimes, in young animals, they seem to depend merely on the irritability of the nervous system, which is strongly affected by slight causes. Convulsions, however, often take their rise from wounds, irritations of the stomach and intestines by worms, poisons, violent cathartics, &c.

Convulsive disorders are always to be dreaded; but less in young animals than in such as are of more advanced age. The treatment is very much the same with that of epilepsy (see EPILEPSY); but a recovery is most frequently obtained by the removal of the existing cause.

**COPPER**, a well-known metal, of a reddish tawney colour, and of which much use is made in veterinary medicine. The preparations of this metal are verdigrise (see VERDIGRISE and ÆGYPTIACUM); ammoniated copper; vitriolated copper, called *blue-stone*, or blue vitriol (see VITRIOL); and water of ammoniated copper.

**COPPERAS**, a name given to the three vitriols, viz. the blue, green, and white. The English green vitriol is purely ferrugineous, but almost all others have an admixture of copper. It seems as if the metallic part of all vitriols had been formerly supposed to be copper only; hence in various countries they have received names expressive of copper. The English call each of them *copperas*; the Germans, *kupferwasser*; some Latin writers, *cuperosum*, i. e. *cuprum ersum*; the Greeks, *χαλκανθος*.

**COPULATION**. See COITION.

**CORACO-BRACHIALIS**, **CORACO-BRACHIALIS** (from *κοράξ*, a crow, and *βραχιων*, brachium, an arm). This muscle arises tendinous and fleshy, from the fore-part of the coracoid process of the scapula, adhering in its descent to the short head of the biceps; inserted, tendinous and fleshy, about the middle of the internal part of the os humeri, near the origin of the third head of the triceps, called *brachialis externus*, where it sends down a thin tendinous expansion to the internal condyle of the os humeri. See *a b c d e*, in Plate III. and description under ANATOMY of the horse.

**CORACO-HYOIDEÆUS**. It arises from the superior part of the upper costa of the scapula; and is inserted into the basis of the os hyoides, to pull it downwards and backwards.

**CORACOID PROCESS**, the *beak-like* process. Its name is from its likeness to the beak of a crow. It projects from the anterior extremity of the upper costa of the scapula. This process is a little crooked, with its point inclining forwards; a ligament goes out on its supe-

rior part, to connect it to the acromion and clavicle. See BONES of the horse, and Pl. V.

**CORACOIDEUS**, the same as **CORACO-BRACHIALIS**.

**CORD**, or **CHORD**, the part by which the testicle of a male animal is suspended, and which passes through the abdominal ring in each groin. See TESTICLE.

**CORDIALS**, medicines which act by stimulating the stomach, and quickening the circulation of the blood. Of this description are the whole class of aromatic substances, volatile and ardent spirits, &c. which, given to excess, produce secondary debility, and exhaust the animal powers, after having caused an inordinate exertion of them.

Mr. CLARK very properly reprobates their indiscriminate use in veterinary practice. He says, when horses fall sick, it matters not with some what may be their complaint: it is too common to give them such things as many people esteem cordial or comfortable things to themselves; these are ardent spirits, a little diluted, or wine, ale, &c. either alone, or heated and mixed with different kinds of spices. Wine or ale may indeed be given, in very small quantity, to a horse that is in health, when tired or fatigued on a journey, or in consequence of very hard labour; but they are by no means proper to be given in any quantity to a horse that is sick, more especially ardent spirits, as neither the stomach nor the head of a horse, even in health, can bear much of these liquors at any time. On the contrary, he soon turns giddy, and loses the use of his hind quarters during a fit of intoxication; and, when given to a horse that is sick, they may be expected to add fuel to the disease, unless his malady be such as really to demand the internal exhibition of stimulants for its cure; but these distinctions are seldom attended to.

**CORIANDEŔ**, the *Coriandrum sativum* Lin. The seed, which only is used in medicine, is carminative and aromatic. Its chief use is to correct the activity of purgative remedies, and to prevent their griping. The plant is umbelliferous, differing from all the others of that class in producing spherical seeds. These, when fresh, have a strong disagreeable smell, which improves by drying, and becomes sufficiently grateful.

**CORNEA**, the transparent circular portion of the eye, through which the rays of light are transmitted to the retina. See EYE.

**CORNERS**, the angles of the volt in the mane, or the extremities of the four lines of

the volt, when working in a square. See the articles VOLT and SQUARE.

**CORNER-TEETH** OF A HORSE, four teeth placed between the middle teeth and the tusshes, being two above and two below, on each side of the jaw, which shoot when a horse is five years old, or rather in the spring before he is five; then the corner-teeth begin to appear, and at first but just equal with the gums, being filled with flesh in the middle. These differ from the middle teeth, in their being more fleshy on the inside; they grow leisurely, and differ also from the other fore-teeth in the kind of resemblance they bear to a shell, whence they are called the shell-teeth, because they environ the flesh in the middle half-way round; and, as they grow, the flesh within disappears, and leaves a distinct hollowness and openness on the inside. The corner-teeth on the upper gums cast out before those on the under, so that the upper corner-teeth are seen before those below.

**CORNET**, a name sometimes given to the instrument used in venæsection called a FLEAM.

**CORNS**. See BLEIME. Mr. DENNY, in his *Treatise on the Diseases of Horses*, describes corns as a disease arising from inflammation of the sensible sole near the heels, and mostly at the inner quarter. He says—

“It is discovered by lameness, particularly on the animal's first going from the stable. The foot feels hotter than usual, and on taking off the shoe considerable pain is perceived on pressing the part. The horny sole appears of a red or brown colour, from an effusion of extravasated blood. If the inflammation be not early attended to, it proceeds to the formation of matter, which either insinuates itself between the lamina of the hoof and foot, escaping at the coronet, or, from its corrosive quality, destroys the horny sole, and is discharged at the bottom of the foot.

“Bad shoeing is generally the cause of this disease.

“Horses that have naturally flat feet and thin soles are commonly subject to corns.

“Towards effecting a cure, the diseased part should be removed with the drawing-knife, taking care not to injure the hoof. The wound may be dressed with tincture of myrrh and lint; and the foot, during three or four days, covered with a common bran poultice, changed two or three times daily. Afterwards a bar shoe is to be applied, to rest firmly on the frog, and to prevent any pressure being received opposite to the seat of the disease. The foot may be stopped daily with the following :

Take of Common turpentine,  
Hog's lard,  
Tar, of each a quarter of a pound.  
Mix them well together.

“When the common shoe is again applied, it will be necessary to make the sole, from the quarters to the heel, as concave as the strength and thickness of it will admit; taking care that the shoe rest firmly on the bar and crust at the extremity of the heel.”

**CORNU CERVI**, the stag or hart's horn. From this was formerly drawn the liquor volatilis cornu cervi (*spirit of hartshorn*) by distillation; but bones and horns of all kinds are now substituted, and with equal advantage.

These substances burned to whiteness form what is called *calcined hartshorn*, the powder of which, boiled in water, affords a mildly astringent decoction.

**CORNUA**, horny excrescences, which sometimes arise on the surface of the body of an animal.

**CORNUA UTERI**, in comparative anatomy, the horns of the womb. The womb is so divided in some quadrupeds as to form corners resembling horns.

**CORONALIS**, is the first suture of the skull. It reaches transversely from one temple to the other; it joins the os frontis with the ossa parietalia. This is open the breadth of a finger or two in the middle in young animals, but grows close with age.

**CORONARY BONE**, or **LITTLE PASTER**, in the horse. See BONES.

**CORONARY VESSELS**. See BLOOD-VESSELS.

**CORONARY LIGAMENT**, in the human subject, a sort of ligamentary hoop, surrounding the circular circumference of the head of the humerus, reaching from one side of the small lateral sigmoid, or transverse cavity of the ulna, to the other, in an arch which is about three fourths of a circle. It is nearly as solid as a cartilage. It connects the radius very close to the ulna, yet admits of the pronation and the supination of the arm. Many quadrupeds have this ligament.

**CORONET**, or **CRONET**, of a horse's foot; that part surrounding the upper part of it, where the hair grows down upon the hoof; or it is the lowest part of the pastern, which runs round the coffin, and is distinguished by the hair, which joins and covers the upper part of the hoof. The coronet should be no more raised than the hoof, nor make, as it were, a ridge or height round it.



**CORPORA CAVERNOSA**, two spongy bodies arising distinctly from the lower part of the os pubis, and principally forming the penis in many male animals. A little from their root they come close together, being only divided by a membrane, which, at its beginning, is pretty thick, but, as it approaches to the end of the yard, grows thinner and thinner, where the corpora cavernosa terminate in the middle of the glans. The external substance of these spongy bodies is hard, thick, and white. The internal is composed of small fibres and membranes, which form a sort of loose net-work, upon which the branches of the blood-vessels are curiously spread. When the blood is stopped in the great veins of the penis, it runs through several small holes in the sides of their capillary branches into the cavities of the network; by which means the corpora cavernosa become distended, and by that means the penis erected.

**CORPORA FIMBRIATA**, a border on the edge of the fornix in the brain is thus named.

**CORPORA OLIVARIA**, or **PYRAMIDALIA**, two eminences on the medulla oblongata. Winslow calls these *Corpora Olivaria*, which Willis calls *Corpora Pyramidalia*.

**CORPORA STRIATA**, two prominences in the lateral ventricles of the brain. See **BRAIN**.

**CORPUS CALLOSUM**, is the upper part or covering of the two lateral ventricles, appearing immediately under the process of the dura mater, below the depth of all the circumvolutions of the brain, and formed by the union of the medullary fibres of each side. See **BRAIN**.

**CORPUS SPONGIOSUM URETHRÆ**, the spongy body of the urethra in male animals. It is of the same substance as the corpora cavernosa, and surrounds the urethra, and at its extremity forms the glans. That end next the prostate, because of its bigness, is called *the bulb of the urethra*.

**CORRECTIONS**, in the manege, denote those helps, or **AIDS**, given by the rider with some degree of severity.

Under the head of correction, however, it may be more material to consider the errors of intemperate people in the education and common management of the horse. These are judiciously commented upon by Mr. Clark, in the following terms:

In his chapter on the practice of *beating and ill-treating horses*, he says, the reason why horses are generally rendered vicious is mal-

treatment of some kind or other on their being first handled, and in the breaking, the effects of which remain longer with some than with others, according to their tempers or dispositions; for they possess these peculiarities as well as mankind, of which there is considerable variety. If we wish to have them docile and tractable, we shall succeed much better by familiarity, caresses, and gentle usage, than by harsher means. Horses which start and boggle at almost every object they meet with on the road, do so under the impression of fear, which remains with them after having been beaten on such occasions, or on seeing such objects formerly. Chastisement, in such cases, always increases the animal's fears, and makes him worse: but soothing words, and stroking his neck, &c. gently, will pacify him, and reconcile him to the object that scares him. He should likewise be suffered to stand still till such time as his fear abates. At the same time, he will naturally use another of his senses to satisfy his fears, which is that of hearing: if there be nothing to alarm that sense, his fear soon subsides. The constant habit of gentle usage towards horses, especially on such occasions, will banish this timidity entirely from them. It is the same with horses in a variety of other respects: thus, a sprightly horse, once ill used on his being first shod, will be alarmed even at the farrier's voice ever afterwards; and the sight of a smith's forge will always put him in a tremor.

As horses readily know the voices of individuals, they soon learn to distinguish the tone of soothing, or that of anger, in every language where they happen to be situated; and it will be found, that, where horses are accustomed to be directed by the ear, that is, by words spoken familiarly to them, they are by far more tractable and pliant than where the whip is always used.

The observation with respect to horses that start at objects on the road ought particularly to be attended to, as it is frequently followed with fatal consequences to their riders, and is sometimes hurtful to themselves, as sudden or violent exertions made on these occasions have produced incurable lameness.

Many horses, from a variety of causes, are apt to trip and stumble when travelling on the road. The whip and spurs are too frequently applied by way of chastising them for this accident. Hence those horses that are much addicted to tripping or stumbling soon become sensible of what they are to expect from a repetition of this blunder; which no sooner hap-

pens, than, in order to avoid the punishment they dread, they exert themselves to the utmost of their power to recover their feet, and suddenly spring forwards, or sideways, to the great danger of unhorning the rider. It likewise frequently happens, that, in their attempts to recover themselves from the first stumble, through fear they often fail in their endeavours, and tumble down headlong.

It should never be forgotten, that there are a variety of causes which contribute to make even the surest-footed horse trip and stumble at times; and, even in the other case, when duly considered, it must be obvious that severe chastisement is not only cruel and useless, but a certain way to increase the evil.

If a saddle comes too far forward on the shoulders of a horse, this circumstance, together with the weight of the rider, prevents the free action of his shoulder-blades; of course he must be liable to trip and stumble. Every thing about the feet too that makes the horse go uneasy will operate to produce the same effect as weak hoofs, whether naturally so or occasioned by bad management. Too strait, or too heavy, thick, ill-formed shoes, the nails driven too near the quick, diseases in the feet, as corns, running thrushes, hoof-bound, cracks in the heels, are amongst the causes of this defect in a horse; and to these may be added, the suffering the hoofs to grow too long towards the toe, by which means the horse strikes the ground before he has made a full step, whether in walking or trotting, and, of course, will trip, and drive the loose stones in every direction around him.

Mr. Clark adds, that horses likewise stumble from mere debility or weakness, either proceeding from a natural cause or from fatigue, or from being overloaded by too heavy a rider in proportion to their strength, or from having had too low diet or poor keeping. All these considerations, no less than those of humanity to a patient animal, who renders to his employer the best services of which he is capable, should stop the uplifted hand designed for his correction, and check the impetuous wrath even of those who suffer by his mistakes.

**CORRECTORS**, such ingredients in a prescription as guard against or abate the force of other remedies; as the lixivial salts, which prevent the grievous vellications of resinous purges, by dividing their particles, and preventing their adhesions to the intestinal membranes, whereby they sometimes occasion intolerable gripings; and as spices and carminative seeds also assist in the easier operation of some cathartics, by dissi-

pating collections of wind. In the making a medicine, likewise, such a thing is called a *corrector* which destroys or diminishes a quality in it that could not otherwise be dispensed with.

**CORROBORANTS**, medicines which increase the strength of the body, and give tone to the solids. Such are bark, and the preparations of iron, &c. Some include the stimulating balsams and resins in this class.

**CORROSION** (from *corrodo*, to eat away), a particular species of dissolution of bodies, either by an acid or a saline menstruum. Thus spongy flesh is corroded or eaten away by burnt alum, precipitate, or corrosive sublimate, applied to it.

**CORROSIVE SUBLIMATE**, an active mercurial preparation, technically named *mu-riated quicksilver*. See **SUBLIMATE**.

**CORRUGATE**, to wrinkle or purse up, as the skin is drawn into wrinkles by cold, or any any other cause. There are muscles called *Corrugators*. Each eye-brow has one, arising from the great canthus of the orbit, and terminating in the skin about the middle of the eye-brow.

**CORTEX**, BARK. See **CINCHONA**.

**CORTICAL**, a name given to the exterior portion of the brain, which, for some little depth from the surface, is of a brown or ash colour. See **BRAIN**.

**COSTIVENESS**, a morbid retention and hardening of the feces, common to most animals. In horses it sometimes arises from violent and hard exercise, especially in hot weather. Sometimes costiveness proceeds from a contrary cause, viz. from standing long at hard meat, without grass or other cleansing diet, and having but little air and exercise, or having their exercise only in spurts, and not continued. When costiveness proceeds from either of these causes, it is easily remedied, if taken in time. But there is another kind of costiveness in horses, which is more hard to be removed, viz. that which seems to be natural, or grown into a habit.

In the first case, the cure is obvious, only by giving him an open diet for some time; and, if any thing more is wanting, lenitive mild purges are the most likely to succeed. In the second, when costiveness proceeds only from want of air and exercise, and a cooling lax diet, it is no less easily remedied with proper lenitives; as a single drachm of aloes, frequently repeated, according to its effects. Gibson recommends Glauber's salt with lenitive electuary, viz. four ounces of each dissolved in warm ale or water, and repeated every other day, with scalded bran



every day till the horse's body is thoroughly opened, giving him at the same time air and exercise. Oily clysters may also do service in this case; and, after these things are complied with, two or three purges may not be improper.

But that sort of costiveness which seems natural to the constitutions of some very good horses is not easy to be removed; indeed we seldom find it necessary to bring such horses into a contrary habit: for, where this is natural, and exists without impairing the power of digestion in the stomach and bowels, as sometimes happens, and the horse is otherwise in perfect health, no inconvenience will arise from it, and it is observed that such horses are able to endure great fatigue and labour. However, it is proper to give such horses at all convenient times an opening diet; for, if this habit, by any accident, happens to increase, and grow into an obstinate costiveness, so as to produce ill effects, as heat, dryness of the constitution, little scabby eruptions over the skin, and a rough coat, it will then be necessary to remove it in some degree, which cannot be done but by a continued use of emollients, and a loose opening diet along with them. Purges are here also necessary.

**COUGH**, a well-known spasmodic action of the diaphragm, chest, and lungs, by which an effort is made to expel something which irritates the latter, either directly or by sympathy. As an acute disease, it has been considered under CATARRH and COLD. Nothing, however, has more perplexed the practitioners in farriery than the cure of a *settled* or chronic cough, which, if of long continuance, and without the other symptoms of a cold, frequently degenerates into asthma, broken wind, or consumption in horses.

The cause is sometimes owing to a cold that has never been perfectly cured; sometimes to a pleurisy, peripneumony, or malignant fever, that has left a taint upon the lungs, or some other principal viscera, which may produce tubercles and hard scirrous substances. From hence an irregular circulation of blood in the lungs, and the want of a free passage of the air through the bronchial vessels, must naturally produce a cough and an inordinate working of the flanks, as often as a horse is put upon any brisk action. Sometimes a settled cough proceeds from little erosions in those parts; sometimes only from a superfluity of tough phlegm, and mucilaginous juices stuffing the glands and branches of the windpipe; and sometimes from polypuses or fleshy

substances shooting into and filling up the large blood-vessels.

Some horses are subject to a *nervous cough* when the nerves that are dispersed on the lungs and diaphragm happen to be irritated. Now, when a horse has a settled cough of any kind, the signs and diagnostics are carefully to be observed which distinguish one cough from another; because without that it is impossible to find out the proper method of cure. Thus, if a horse's cough is of long standing, attended with loss of appetite, wasting of flesh, and weakness, it denotes a consumption, and that the lungs are full of tubercles, which have often been discovered on dissection. See the article CONSUMPTION.

Gibson describes the following signs as denoting that the cough proceeds from phlegm that obstructs the air-vessels of the lungs. The horse's flanks have a sudden and quick motion; he breathes thick, but not with his nostrils open, like a horse in a fever, or that is broken-winded; his cough is sometimes dry and husky, and sometimes moist, before which he wheezes and rattles in his throat, and sometimes throws out of his nose and mouth white phlegm, especially after drinking, or when he begins or ends his exercise, which discharge commonly gives great relief. Some of these horses wheeze and are so thick-winded, that they can hardly be dragged along at first, till they have been out some time in the air, though then they will perform beyond expectation. These are properly asthmatic cases, the proper treatment of which will be found under ASTHMA.

As mercurial medicines are found remarkably useful in these cases, give a mercurial ball (with two drachms of calomel) over night, and a common purge the next morning; or the following, which is recommended by Gibson:

Take of Gum galbanum,  
Ammoniacum,  
Asta foetida, of each two drachms;  
Alocs, one ounce;  
Oil of anniseeds, two drachms;  
Oil of amber, one drachm;  
Honey, enough to form it into a ball.

These might be repeated at proper intervals, with the usual cautions. In the intermediate days, and for some time after, one of the following balls may be given every morning:

Take of Cinnabar of antimony, levigated, six ounces;  
 Gum ammoniacum,  
 Galbanum,  
 Asa foetida, of each two ounces;  
 Garlic, four ounces.

Make into a paste for balls, with a proper quantity of honey.

Or the cordial ball (see BALL) may be given, with an eighth part of powdered squills and Barbadoes tar; or equal quantities of the above and cordial ball may be beaten up together; and, where they can be afforded, balsam of Peru, balsam of sulphur, and flowers of benjamin, would undoubtedly, added to the cordial ball, make it a more efficacious medicine in cases of this sort.

Exercise in a free open air is very serviceable, and the diet should be moderate. Horses subject to any inward oppression of the lungs should never be suffered to have a belly-full: that is, they should never be permitted to distend the stomach with meat or water so as to hinder respiration. Their hay should even be abridged, given in small quantities, and sprinkled with water; and their usual allowance both of corn and water should be divided into several portions. By such a regulation in diet, horses may be so recovered as to do great service; and, in all disorders of the lungs, it is what should principally be attended to.

Mr. Taplin describes obstinate coughs of two distinct kinds in effect, though proceeding from the very same cause. The one, he says, may be considered as a loose and almost continual cough, increasing to violence upon the least motion; the other a short dry cough, preceded by a husky hollow kind of wheezing, as if respiration was shortened or obstructed by fragments of hay or corn retained in the trachea. This he considers the kind of cough called *asthma* by former writers, and for which mercurial purges have been recommended, and may be given with propriety after the administration of a course of the following balls, provided the latter should fail of the desired effect. *Bleeding* must be first performed, and occasionally repeated in small quantities, till the glandular inflammation (if any) and irritability are reduced; after which, two ounces of nitre are directed to be given every night and morning in the horse's water, administering one of the following balls every morning for a fortnight or three weeks:

*Detergent Pectoral Ball.*

Take of Castile soap,  
 Aniseeds in powder,  
 Liquorice powder, of each five ounces;  
 Barbadoes tar, six ounces;  
 Gum ammoniacum, three ounces;  
 Balsam of Tolu, one ounce;  
 Honey (if required) to make a mass: which divide into a dozen balls.

If the complaint continue, notwithstanding these efforts to relieve, *bleeding* must be repeated; two doses of mercurial physic may be given eight days apart, with reference to the horse's strength and condition. After these we are directed to repeat the above pectoral balls, with the addition of myrrh, gum benzoin, and Venice turpentine, of each two ounces; dividing the mass into balls of two ounces each, repeating them every morning till the whole are taken.

The long, loud, hollow *cough*, that is almost incessant, and continually increasing upon *motion* or the least hurry in exercise, Mr. Taplin says, proceeds equally from irritability and the action of the slimy mucus upon the glands in respiration, as from the difficulty of the passage of the blood through the finer vessels. This kind of cough he has observed to submit with much less difficulty than the *asthmatic*, requiring only steady and regular perseverance in the plan of cure. In this case, as in the other, *bleeding* must take the lead, followed by a mass compounded of equal parts of bran and oats, into which must be stirred and dissolved, while hot, four ounces of honey. This is to be repeated every night, with the two ounces of nitre in the water, as before directed, without intermission, every night and morning.

*Pectoral Cordial Ball.*

Take of Turkey figs,  
 Spanish liquorice,  
 Aniseeds bruised,  
 Liquorice powder, of each four ounces;  
 Carraway seeds,  
 Elecampane,  
 Anisated balsam of sulphur, of each two ounces;  
 Ginger in powder,  
 Oil of aniseed, of each six drachms;  
 Honey sufficient to form the mass: to be divided into twelve balls, of which give one every morning.



The figs are to be beaten to a paste in a mortar, previous to their incorporation with the other articles; the Spanish liquorice is to be softened over the fire, by boiling in a small quantity of water; and the whole of the ingredients afterwards mixed. These balls, it is said, are powerfully cordial and restorative; that they promote glandular excretion, warm and stimulate the stomach, and invigorate the whole frame; as has been ascertained by their instantaneous effect in the chase, more particularly in deep swampy countries, when, after a severe burst, or a repetition of strong leaps, the horse has been so off his wind as not to be able to proceed farther.

Some young horses are subject to coughs on cutting their teeth; their eyes are also affected from the same cause. In these cases always bleed; and, if the cough is obstinate, repeat it, and give warm mashes, which in general are alone sufficient to remove this complaint. But when the cough is an attendant on worms, as it often is in young horses, give such medicines as have a power to destroy those animals, particularly mercurial physic. See the article **WORMS**.

**COUNTER**, in horsemanship, the breast of a horse, or that part of his fore-hand which lies between the shoulders and under the neck.

**COUNTER-FISSURE**, a crack in the skull, opposite to where the blow was given, *e. g.* the blow is received on the right bregma, and thereby a fissure is occasioned in the left.

**COUNTER-MARKED**. A horse is said to be counter-marked, when his teeth are artificially made hollow by a farrier's graver; and a false mark is made in the hollow place, in imitation of the eye of a bean, with intent to make people think that a horse is not above six years old, and so conceal his age. See **AGE OF A HORSE**.

**COUNTER-OPENING**. This is sometimes necessary in wounds made by puncture, or a bullet, &c. to discharge what is contained in them, or to prevent their growing fistulous. The circumstances requiring this procedure are so various, as to demand the sagacity of the veterinary surgeon: however, in general the opening is made by passing a trochar, or such-like instrument, to the bottom of the wound, directing its point to the nearest skin, and continuing it through, so as to make the old and the new aperture one continued passage; or, secondly, by cutting through the skin, &c. directly upon the intruded body, or upon the button of the probe, which may be introduced

to the bottom of the wound to direct the incision.

**COUNTER-POISE**, or *balance of the body*; that liberty of action in the feat of a horseman which is acquired by practising in the manege; so that, in all the motions made by the horse, the horseman does not incline his body more to one side than to another, but continues in the middle of the saddle, bearing equally on his stirrups, in order to give the horse the proper aids. See the article **SEAT**.

**COUNTER-TIME**, the defence or resistance of a horse that interrupts his cadence, and the measure of his manege. This is occasioned either by a bad horseman, or by the vicious humour of the horse.

**COW**, the female of the species *Taurus*, described by Linnæus. The natural history and habits of this most useful animal are spoken of under **Bos**. Of her diseases it is to be lamented that little is certainly known. Mr. Lawrence's remarks (see the article **CATTLE**) form the sum of what other writers have advanced. It is to be hoped the investigations of veterinary surgeons in different parts of the country will greatly add to this *modicum* of knowledge; for, certainly, it is a subject of by no means secondary importance, either to individuals or the community. Circumstances relative to the assistance which may be afforded the cow, in cases of difficult parturition, are considered under **OBSTETRICS**. We shall here give a short account (to which we were pledged in a former article) of the **ALLANTOIS**, the common investing membrane of the fœtus in brutes, but denied, by Dr. Hunter, to have any existence in the human subject. It is thus named from the Greek *αλλας*, a *sausage*, or hog's pudding; because in some animals it takes that shape. It is asserted that this membrane contains the urine discharged from the bladder of the fœtus; and, as a proof of it, that the urine can be discharged either into one or the other, through a pipe properly fitted. Neither artery nor vein can be discovered in the allantois.

One of the diseases of the cow reserved for this place is the

**COW-POX**, a disease affecting the teats of the cow, and contagious in so far as it often is propagated to other cows by the hands of the milkers. This disease appears in the form of blue vesicles (see **Pl. VII.**), surrounded with inflammation; the animal is indisposed, and the secretion of milk lessened.

Vesicles similar to those on the nipples of the cow, but less blue, appear on the hands of the

milkers, attended with febrile symptoms, and frequently with tumors of the axillæ. Vesications of the same kind may also take place in any other part, in consequence of inoculation by the fingers of the patient, impregnated with virus. These vesicles, produced by the casual infection, whether in the human subject or the brute animal, often degenerate into troublesome ulcerations, unless proper applications be employed. Those in common use are solutions of cuprum vitriolatum and zincum vitriolatum. Saturnine applications, however, will in all probability be found preferable.

Morbid virus of various kinds is capable of exciting a disease bearing some resemblance to that already described: but the diagnostics laid down by Dr. Jenner are sufficiently clear to enable us to distinguish the maladies from each other. The genuine cow-pox consists of *vesicles*; the spurious of *pustules*. These have neither the blueness nor the central depression which characterize the former; nor are they so infectious, nor so likely to be followed by obstinate ulcers, as the genuine kind.

The spurious cow-pox originates from common inflammation, whether occasioned by neglect of milking, luxuriant food, the sting of an insect; or any other cause. This affection is but rarely communicated to the hands of the milkers; and only deserves to be mentioned on account of the possibility of its being mistaken for the genuine species of the cow-pox. It is, indeed, so benign, that, in many places where it is well known, no idea is entertained of its being contagious; and it may reasonably be doubted whether it really is so, till the matter which the pustules contain has undergone a decomposition.

A physician at Milan informs us, that the cow-pox is a malady which, till the present time, belonged almost solely to the veterinary department; and that scarcely a single veterinary writer gives a proper description of it, or a proper diagnosis. It is represented by Dr. Sacco as consisting of little tumors, depressed in their centres, of a shining appearance, and reddish brown colour, containing a thin inodorous fluid, which thickens, and forms an incrustation. These incrustations become of a deep red; and the cows suffer great pain at the time of milking. This distemper, which is not very commonly observed, is attended with diminution of appetite, a continual rumination without any materials in the mouth, and a motion of the lips resembling that of a person playing on a flute. The milk is lessened; the eye downcast. There is a slight symptomatic fever. The

pustules are seated on the nipples, and the lower part of the udder: sometimes, but rarely, a few appear about the eye-lids and nostrils. This species of distemper, Dr. Sacco observes, is contagious to such a degree, that, if one cow contracts it, in the course of ten days the whole herd will be infected.

With regard to the cure of this disease, little has been offered by veterinary writers. It is probable that the early application of lunar caustic, blue vitriol, or verdigrise, with a view of eating off the infected surface of the ulcer, after the cuticle has given way, would be useful. And as the cause of its propagation to the rest of the herd is well known, the milker of the infected cow, as well for his own sake as for that of his employer, should carefully wash his hands with soap and water after each milking. For the ulceration which has been called the spurious cow-pox, alum water, or any other detergent lotion, may suffice.

COXÆ OSSA, or Os COCCYGIS, the tail-bone. See *n o p q*, in Pl. V. and the description of the "*bones of the spine from the neck*" in the horse.

COXENDIX, a part of the pelvis of the horse, immediately connected with the coxæ. These, taken together, form eighteen joints, which constitute the tail.

CRACKS, or CHOPS, *in the heels of a horse*. These are sometimes constitutional, but more frequently local, and owing to the want of cleanliness and proper attention on the part of the groom. When the heels are full of hard scabs, it is necessary to begin the cure with poultices made either of boiled turnips and lard, with a handful of linseed powdered, or oatmeal and rye-flour, with a little common turpentine. Digestive ointment being applied to the sores for two or three days, with either of these poultices over it, will, by softening them, promote a discharge, unload the vessels, and take down the swelling; when they may be washed with the following lotion:

Take of Vitriolated zinc,  
Burnt alum, of each two ounces;  
Ægyptiacum, one ounce;  
Lime-water, a quart or three pints.

Wash the sores with a sponge dipped in this three times a-day, and apply the common white ointment, spread on tow, to an ounce of which may be added two drachms of sugar of lead.

SAND-CRACKS. See the article SAND-CRACKS.



**CRAMP**, a local spasm of the muscles of a part, accompanied with violent pain, which ceases in the intervals when the spasm is absent (see **SPASM**). Horses are liable to be seized with cramp in their hinder legs; and this sometimes affects them universally, of which Gibson has related a striking instance in a troop-horse, whose case was treated after the manner of epilepsy, and with success. Mercurial purges, bleeding, opium, the warm bath, and topical stimulants, seem to be required in such cases.

**CRANIUM** (quasi *καραιν*, from *καρ*, the head), the skull. Besides the os frontis, it consists of the two parietalia, the two temporal, the occiput, the os ethmoides, and os sphenoides. See Pl. V. and the description of *bones in the head*, under **BONES**.

**CRAPAUD**, the French name for the disease in the horse called *canker*. See **CANKER**.

**CRAPAUDINE**, or **TREAD UPON THE CORONET**, an accident very commonly happening to horses, especially in the manege, when, in passing, they do not sufficiently cross their legs. Mr. John Lawrence says, "It hurts upon the coronet, and treads on the heels, the rationale is giving *instant attention*; when that may be made whole in a day or two, which, if neglected, may cost months and pounds, and at last be an incomplete cure. I had once a fine cart-horse three months in the stable, under the farrier's hands, and five months afterwards abroad, in consequence of a simple tread upon his heel by another horse." He advises to cleanse the part well with warm fuds, and dress it with tincture of myrrh; but very properly forbids the use of greasy applications.

**CRAPULA**, a distended state of the first stomach of a ruminating animal, in consequence of having eaten too freely of flatulent food. It is common to horned cattle, and is thus described by Mr. Topham.

"A crapula," says he, "is a preternatural distension of the receptacle or first ventricle, caused by unwholesome aliments, or over-eating, as of fog, clover, vetches, and the like. When a superabundant quantity of any of those fermenting aliments is taken in, it distends and compresses the neighbouring blood-vessels; it prevents rumination, circulation, and all other requisite motions employed for the support of life."

"In this complaint," continues he, "no internal remedies can be of service; and the reason is as follows:

"A cow's first ventricle, paunch, or receptacle, always contains unmacerated food only, without any liquid: this solid food, after lodg-

ing a sufficient time, is again brought into the mouth to be ruminated, and then it is admitted into the reticulum and omasus. Therefore nature will not admit any liquid or medicine to enter the affected part, because there it cannot be digested."

"In this malady, the paunch, being preternaturally distended, compresses the blood-vessels on each side of the body, and obstructs the circulation, so that the blood is stopped in its passage to and from the heart: hence arise inflammations, extravasation, and a dire train of diseases, even death itself, if not timely prevented by due evacuations."

For the cure, Mr. Topham, consistently with his theory of the disease, recommends repeated bleeding as obviously necessary.

"Of all the diseases incident to the brute creation," says he, "no one demands a more free and speedy evacuation; for *that alone* is an absolute cure. Blood must be drawn from some of the large vessels in the hinder parts of the body, and from both sides of the neck: this unloads the vessels, and makes room for the remaining fluids to circulate. Nature herself will at last discharge the contents from the paunch for rumination; and then the cure is effected.

"If there be a difficulty in throwing up the aliments, which is likely to endanger the animal's life, take hold of the tongue with one hand, and pull it to one side of the mouth; then introduce the other hand into the mouth, and down the throat; there you will find a large heap of matter upon the gullet, which must be brought away.

"Flexible pipes have been recommended, which are to be introduced down the throat into the stomach, and by that means procure a passage upwards for the rarified air, the consequence of fermentation."

It is evident, from this account, that Mr. Topham considers *crapula* to be that not uncommon disease of horned cattle which is otherwise called **GORGED**. Notwithstanding his reliance on a treatment exclusively addressed to the symptoms, there is little doubt but the remedy he has laid the least stress on is the most important; and that, if the operation of **PAUNCHING** be not resorted to, the insertion of a tube, for the purpose of giving vent to the confined air (for the method of which see the article **CATTLE**), will prove the most effectual remedy, and perhaps supersede the necessity of drawing blood.

**CRASIS** (*κρσις*, mixture), the temper of the blood peculiar to every constitution.

**CRASSAMENTUM** (from *crassus*, *thick*). So the red globules in the blood are called, in the due proportion of which consists the health of all animals.

**CRATCHES**, a swelling on the horse's pastern, under the fetlock, and sometimes under the hoof; whence it is distinguished into the finewy cratches, which affect the sinews, and those upon the coronet, called the quittor. See the article **QUITTOR**.

**CREAM-COLOUR**. See **COLOUR**.

**CREAM OF TARTAR**, a saline substance, possessed of mild purgative qualities, and therefore, in all probability, possessing little efficacy in veterinary prescriptions, in which it nevertheless occasionally figures. It is commended by Gibbon as a "gentle purge," but "brisk in its operation, and passing off readily by urine." He says it may be dissolved in warm ale, with a sufficient quantity of syrup of buckthorn, and given to horses and other cattle occasionally, as an alternative, or in the jaundice.

**CREAT**, in the manege, an usher to a riding-master, or a person bred in that art with intent to teach others the art of riding the great horse.

**CREMASTER** (from *κρεμαω*, *suspendo*, to *suspend*). The cremaster muscles are also called *suspensorii testium*. They arise from the inside of Poupart's ligament on each side, run down to the perforation where the femoral cord comes out, and, being expanded over it, make part of the tunica vaginalis communis. Their use is to draw up and suspend the testes.

**CREPANCE**, a chop or scratch in a horse's leg, given by the shoe of one of the hinder feet crossing and striking against the other hinder foot. This sometimes degenerates into an ulcer, which is cured by washing it with lead-water, or some of the liquid directed under the article **CRACKS**.

**CREPITUS**, a crackling of the joints, from a defect of synovia, or other causes. Also a noisy discharge of air from the anus.

**CRESCENT**. A horse is said to have a *crecent*, when the point, or that part of the coffin-bone which is most advanced, falls down and presses the sole outwards, and the middle of the hoof above the toe shrinks and becomes flat, by reason of the hollowness beneath. These crecents are in reality the bone of the foot, which has left its place, and is fallen downwards, so that the under part of the foot, that is of the sole and the toe, appears round, and the hoof above shrinks in.

**CREST-FALLEN**, that imperfection in a horse when the upper part of his neck, on which

his mane grows, called the *crest*, hangs either on the one side or on the other; not standing upright, as it ought to do. This proceeds for the most part from poverty, caused by ill keeping, and especially when a fat horse falls away suddenly through sickness. A cruel operation is practised by horse-dealers to remedy this; but the most rational and humane way is to restore the horse to his former condition by good keeping.

**CRIB-BITING**, in horses, is rather a habit than a disorder, though, doubtless, a very bad one, and should be prevented, if possible. Young horses are most subject to get this habit, and it is often occasioned by uneasiness in breeding of teeth, and from being ill fed when they are hungry. The bad consequences are, wearing away their teeth, spilling their corn, and sucking in the air in such quantities as will often give them the colic or gripes.

The best method is to put a little straw into the manger to prevent his biting it, and to abridge his allowance of hay; or you may put him by a wall where there is no manger, and lay his hay on the ground, and give him his oats in a bag. If this practice is pursued for any length of time, it will effectually cure him of this very pernicious habit.

**CRICK**, is when a horse cannot turn his neck any manner of way, but holds it fore-right, inasmuch that he cannot take his meat from the ground without great pain. Rowels have been recommended; but blistering, and the application of spirit of turpentine, will answer the purpose.

**CRICO-ARYTÆNOIDÆUS LATERALIS** (from *κρικος*, a ring, *αρυταινα*, an ewer, and *ειδος*, shape), arises fleshy from the cricoid cartilage laterally, where it is covered by part of the thyroid, and is inserted into the side of the base of the arytenoid cartilage near the former. Its use is to open the rima glottidis, by pulling the ligaments from each other.

**CRICO-ARYTÆNOIDÆUS POSTICUS**, arises fleshy from the back part of the cricoid cartilage, and is inserted into the posterior part of the base of the arytenoid cartilage. Its use is to open the rima glottidis a little, and, by pulling back the arytenoid cartilage, to stretch the ligament so as to make it tense.

**CRICOIDES** (*κρικος*, a ring, and *ειδος*, a form), the name of the annular cartilage belonging to the larynx.

**CRICO-PHARYNGÆUS** (from *κρικος*, annular, and *φαρυγξ*, gutter). It arises from the side of the thyroid cartilage, near the attachment of the sterno-hyoidæus and thyreo-hyoi-



dæus muscles, and from the cricoid cartilage, near the cricothyroidæus: it is inserted into the white line, where it joins with its fellow, the superior fibres running obliquely upwards, covering nearly one half of the middle constrictor, and terminating in a point: the inferior fibres run more transversely, and cover the beginning of the œsophagus. Its use is to compress that part of the pharynx which it covers, and to raise it with the larynx a little upwards.

**CRICOS** (*κρινος*, a ring or circle). Hippocrates calls the annular cartilages which form the *aspera arteria* thus.

**CRICO-THYROIDÆI** (from *κρινος*, a ring, *δωκιος*, a helmet, and *ειδος*, shape). These arise from the sides and fore-part of the cricoid cartilage, running obliquely upwards; are inserted each by two portions, the first into the lower part of the thyroid cartilage, the second into its inferior cornu. Their uses are to pull forwards and depress the thyroid, or to elevate and draw backwards the cricoid cartilage.

**CRISIS** (*κρισις*, from *κρινω*, to judge), is some change in the patient, which discovers the state of a disease, whether for the better or the worse. Hence, in human diseases, **CRITICAL DAYS**, which are the days wherein such change happens. The diseases of brutes, however, are too simple to be subject to a similar influence.

**CRITICAL**, a term used in medicine to denote the particular signs by which a disease may be known to have arrived at its height, so that a decisive result may be soon hoped for. Sometimes a general disease of the constitution is relieved by a less considerable disease that is *local*. Thus, a fever is sometimes cured by a *critical* abscess, a *critical* diarrhœa, &c. In such cases great care is generally taken not to interrupt this salutary effort of nature by any ill-timed remedies; but, on the contrary, these efforts are assisted by every gentle means that may occur to the practitioner.

**CROATS**, or **CRAVATS**, horses brought from Croatia in Hungary, which, for the most part, beat upon the hand, and bear up to the wind, that is, bear their necks high, thrust out their noses, and shake their heads.

**CROCUS**, *Crocus sativus* C. B. Lin. S. P. Saffron; the chives or fleshy capillaments growing at the end of the pistil of the flower, carefully picked and pressed together into cakes. There are three sorts of saffron met with in the shops; two of which are brought from abroad, the other is the produce of our own country: this last is greatly superior to the other two, from which it may be distinguished by its blades

being broader. Saffron, though an ingredient in many prescriptions of the old farriers, is totally undeserving of a place in their materia medica.

**CROCUS METALLORUM**, the crocus or liver of antimony (see **ANTIMONY**). Other metalline preparations are so called from a supposed resemblance in their colour to saffron (*crocus*); for instance, the **CROCUS MARTIS**, which is nothing more than an oxide of iron.

**CROPPING**, an operation performed with a pair of sheers on the ears of a horse, dog, or other animal, when their natural form does not happen to contribute to its beauty. Mr. John Lawrence asserts, that he has cropped *yearlings*. "It is apparent," says he, "in that time, or, at any rate, at two years old, whether from the over-size, ill-shape, or position of the ears, it will be ever necessary to crop the nag; and, if so, there is an obvious convenience in having it done *early*, and before he comes into work; and I have never found that the after-growth of the ear spoiled the crop. There is one disadvantage in this business, which, however, some people will think an advantage. It furnishes an opportunity of deception. One of the colts mentioned above I sold to a dealer at two years old: being cropped and docked, and neither his ears nor tail bearing the least mark of recent operation, he in one single day more reached *four* years of age, and was actually sold at Winchester fair as a *four-year-old*." The practice of cropping the ears of animals, as it is confessedly useless, if not pernicious (in so far as it must occasion *some* imperfection in the conveyance of sound to the internal ear), might very well be dispensed with. See **EAR**.

**CROSS**, in the manege. To make a cross in corvets, to make a cross in balotades, is to make a sort of leaps or airs with one breath, forwards, backwards, and sideways, as in the figure of a cross.

**CROUP OF A HORSE**, the extremity of the reins above the hips. The croup of a horse should be large and round, so that the tops of the two haunch bones be not within view of each other; the greater distance between these two bones the better: but yet it is an imperfection if they be too high, which is called **HORN-HIPPED**; though that blemish will in a great measure disappear, if he can be made fat and lusty. The croup should have its compass from the haunch-bone to the very onset of the tail, and should be divided by a channel or hollow all along to the very extremity.

Mr. ST. BEL says, in his account of the proportions of that celebrated racer—"The size of

the croup of *Eclipse*, as it is given in the table of his proportions, always has appeared to me too great; and the examination of the ileon bones has confirmed me in that opinion. The extent of the os pubis and ischion occasioned too great a distance between the hind legs; so that two lines drawn from the fore to the hind feet, instead of running parallel to each other, incline outward. This defect necessarily occasioned a degree of wavering in the croup, perceptible, and somewhat unpleasant, in his gallop; but the muscular powers of the animal in question over-ruled the little defects which subsisted in the mechanism of his skeleton. When the croup is too narrow, the muscles which communicate with the loins and extremities are thin, and consequently weak. It is easily conceived that such an organization is a great fault in a race-horse." See the article PROPORTION.

A *Recking CROUP* is when a horse's fore quarters go right, but his croup in walking swings from side to side: when such a horse trots, one of his haunch-bones will fall and the other rise, like the beam of a balance, which is a sign that he is not very vigorous.

To *gain the CROUP*, in the manege, is when a horseman makes a demitour upon another, in order to take him upon the croup. If, in a combat, you are hard put to it by your enemy, make a demipyrroet at the end of the passade, and gain his croup.

*Without slipping the CROUP*, is an expression used for volts and a gallop; and signifies without traversing or letting the croup go out of the volt or tread of the gallop.

**CROUPADE**, in the manege, is a leap in which the horse pulls up his hind legs as if he drew them up to his belly. Croupades are higher leaps than those of curvets, which keep the fore and hind quarters of the horse in an equal height, so that he trusses his hind legs under his belly, without jerking, or shewing his shoes. Croupades differ from caprioles and balotades in this, that, in croupades, the horse does not yerk as he does in the other two airs. *High croupades* are croupades raised above the ordinary height.

**CROWNED**. A horse is said to be crowned, when, by a fall or any other accident, he is so hurt or wounded in the knee, that the hair sheds and falls off, without growing again.

**CROWN-SCAB**, in horses, an eruption that breaks out round the coronet. It is very sharp and itching, and attended with scurfiness. Most farriers use only sharp water for the cure

of it; but the safest way is, at the same time, to give the horse a dose of two of physic, or a couple of diuretic balls, such as are prescribed in the GREASE.

**CRUPPER**, the rump of a horse; also a roll of leather put under a horse's tail, and drawn up by a strap to the buckle behind the saddle, so as to keep him from casting the saddle forwards upon his neck.

**CRYSTALLINE HUMOUR**, the second humour of the eye, that lies immediately next to the aqueous, behind the uvea, opposite to the pupil, nearer to the fore part than the back part of the globe: it is the least of the humours, but much more solid than any of them. Its figure, which is convex on both sides, resembles two equal segments of a sphere, and the posterior portion makes a small cavity in the vitreous humour in which it lies. It is covered with a fine coat, called *aranea*. See EYE.

**CRYSTALLIZATION**, the process by which saline substances are made to separate themselves from the fluids which before held them in solution.

Water, assisted by heat, dissolves a larger proportion of most saline substances than it can retain when grown cold; hence, on the abatement of the heat, a part of the salt separates from the menstruum, and concretes at the sides and bottom of the vessel. The concretions, unless too hastily formed by the sudden cooling of the liquor, or disturbed in their coalescence by agitation, or other similar causes, prove transparent and of regular figures, resembling in appearance the natural spring crystals.

Salts, dissolved in a large quantity of water, may, in like manner, be recovered from it in their crystalline form, by boiling down the solution, till so much of the fluid has exhaled as that the remainder will be too little to keep the salt dissolved when grown perfectly cold. It is customary to continue the evaporation till the salt shows a disposition to concrete even from the hot water, by forming a pellicle on that part which is least hot, viz. on the surface. If large, beautiful, and perfectly figured crystals are required, this point is somewhat too late; for, if the salt thus begins to coalesce whilst considerably hot, on being removed into a cold place its particles will run too hastily and irregularly together: the pellicle at the same time falling down through the liquor, proves a farther disturbance to the regularity of the crystallization.

In order to perform this process in perfection, the evaporation must be gentle, and continued no longer than till some drops of the liquor,



let fall on a cold glass-plate, discover crystalline filaments. When this mark of sufficient exhalation appears, the vessel is to be immediately removed from the fire into a less warm but not cold place, and covered with a cloth to prevent the access of cold air, and consequently the formation of a pellicle.

**CRYSTALS OF TARTAR.** See **CREAM OF TARTAR**.

**CUBEBS**, the *piper cubeba*, Lin. Suppl. P. Cubebs are a fruit brought from the East Indies. This fruit has a great resemblance to pepper. The principal difference distinguishable by the eye is, that each cubeb is furnished with a long slender stalk (whence they are called by some *piper caudatum*). In aromatic warmth and pungency cubebs are far inferior to pepper.

**CUBIT**; **CUBITUS**, the *elbow*; that part in the skeleton of a quadruped which answers to the elbow in the human subject. See *Bones in the right upper limb* of the horse, under the article **BONES**.

**CUBITAL**, a name given to the blood-vessels and nerves of the cubit. See **CUBIT**.

**CUCURBIT**, an old chemical vessel, commonly called a *body*. It was made of earth or glass, in the shape of a gourd (*cucurbita*), and was therefore thus called.

**CUD**, that substance contained in the first stomach of a ruminating animal, which is disgorged, *cheewed* again at leisure, and passed into the second stomach to be digested. Vague accounts have been given by ignorant farriers of a disease which they call *Loft Cup*, by which is merely meant a suspension of the process of rumination, when the animal is poor and out of health. An account of their prescriptions for restoring the lost cud in cows, oxen, sheep, &c. would be not merely useless, but disgusting. Mr. John Lawrence, however, has given a rational account of the disease, and the means of remedying it, for which see **CATTLE**.

**CUMMIN**, an umbelliferous plant, in appearance resembling fenel, but much smaller; the seeds are brought chiefly from Sicily and Malta. These have a bitterish warm taste, accompanied with an aromatic flavour, not of the most agreeable kind. They are accounted good carminatives, and occasionally given to cattle, with other remedies, in the form of a **DRENCH**.

**CUNEIFORM BONE.** See **BONES**.

**CUPRUM.** See **COPPER**.

**CURB**; in the manege, a chain of iron made fast to the upper part of the branches of the bridle, in a hole called the eye, and running over the beard of the horse. The curb of a

horse's bridle consists of the following parts: 1. the hook fixed to the eye of the branch; 2. the chain of SS or links; 3. the two rings or mails. Large curbs, provided they are round, are always the most gentle. But care must be taken that it rests in its proper place, a little above the beard, otherwise the bit-mouth will not have the effect that may be expected from it.

**CURB**, a tumor situated on the back part of the hinder leg of a horse, immediately below the hock. Mr. Denny says it is generally occasioned by long-continued exertions or local injury. The degree of lameness is in proportion to the extent of inflammation, which seldom subsides without assistance. The cure, in all recent cases, is effected by blistering. In obstinate cases, however, recourse must be had to the actual cautery. See **CAUTERY**.

**CURCUMA**, the *curcuma longa* Lin. Turmeric. The root of this plant is brought from the East Indies. It is internally of a deep lively yellow or saffron colour, which it readily imparts to watery liquors. It has an agreeable weak smell, and a bitterish, somewhat warm, taste. Turmeric is esteemed aperient, and of singular efficacy in the jaundice. It tinges the urine of a saffron colour. It is a very usual ingredient in the **DRENCHES** or **DRINKS** given to horned cattle.

**CURTAIL**, or **CUR-TAIL**, a name given to the tail of the horse after he has undergone the operation of **DOCKING**, or having a part of his tail taken off. Mr. John Lawrence says, the English have been ridiculed by foreigners for this practice, yet he thinks there can be no doubt of its utility. Long tails, for which some people are such warm advocates, setting aside the inconvenience to the rider, who is apt to be fanned by them, whether dirty or clean, do not, in their appearance, convey that idea of expedition upon which we pride ourselves in this country. Buckled up, it is true, they have a military air, but do not look sportsman-like. For an account of the operation, see **DOCKING**.

**CURVETS**, or **CORVETS**, in the manege, an **AIR** in which the horse's legs are more raised than in the demivolts; being a kind of leap up and a little forwards, wherein the horse raises both his fore-feet at once equally advanced (when he is going straight forward and not in a circle); and as his fore-legs are falling, he immediately raises his hind legs as he did his fore; that is, equally advanced, and not one before the other: so that all his four legs are in the air at once; and as he sets them down, he marks

but two times with them. Horses that are very dull or very fiery are improper for corvets, those being the most difficult air that they can make, and requiring a great deal of judgment in the rider, as well as patience in the horse, to perform.

CUT, a clean wound made with a sharp cutting instrument. The rational way of treating such an accident, in all cases, is to bring the two incised surfaces together, and *bind them up*, if possible, with a little lint or tow laid on superficially. No balsams or spirituous applications should be used (though ever so renowned), nor should the first dressings of the wound be taken off for some days, at least not before there are some appearances of discharge from it. In some cases where this management is observed, the *union by the first intention* will prove so complete as not to require a second dressing, even though the cut be both deep and extensive.

CUT THE ROUND, or CUT *the Volt*, in the manege, is to change the hand when a horse works upon volts of one tread, so that, dividing the volts in two, he turns and parts upon a right line, to recommence another volt.

CUTANEOUS MUSCLE, that by which animals are enabled to shake their skins so as to throw off any dust or loose matter sticking to the hair. It is the same as PANNICULUS CARINOSUS, which see.

CUTICLE, *cuticula*, the scarfskin, is the uppermost cover through which the hair of a brute animal grows. It is extended over the whole skin, and is that which rises into a blister when any part has been burnt or scalded, or when the external parts of the body happen to be inflamed to an extraordinary degree, as in the farcy, and other diseases of the skin. The cuticle has been observed, by the help of glasses, to be made up wholly of scales, which are full of poruli or little holes, infinitely small, for the passage of the perspirable matter in transpiration, which discharge is so necessary to the preservation of health, that when these pores are stopped by colds or any accident, fevers and other maladies generally ensue. The cuticle seems to be formed of a mucus, or moisture that comes from the skin, condensed by the air, and as it is chiefly made of excrementitious matter, it is by that means insensible of pain, or any other sensation; for whatever pain or sensation of any kind is felt by an animal body is transmitted through it by reason of its rare and exquisitely fine texture.

CUTIS, the SKIN or HIDE, which lies under the cuticle, is a strong membranous substance,

made up of compact fibres laid close together, and is susceptible of pain upon the least touch, when the cuticle or scarfskin is accidentally rubbed off; and this happens in consequence of the innumerable branches of nerves, which are distributed over its whole surface. Beneath the skin are seated the *miliary glands*, which are exceedingly small and numerous, and secrete the sweat, which rises like a dew through the pores of the skin and scarfskin.

Horses, and several other large animals, have, besides the cuticle and skin, a fleshy expansion, which lies immediately under the latter, called the *fleshy PANNICLE*, and is made up of muscular fibres, whereby the skin is moved and drawn into wrinkles, to shake off dust, flies, or any thing else that hangs loose upon the hair. It is most thick and distinct over the ribs, flanks, sides of the belly, as also on both sides the neck, but adheres so to the skin, that it is scarcely to be distinguished from it, except where the skin is loose and moveable. It is also a great defence, and serves to keep a horse warm in very cold weather.

CUTTING, a common accident happening to a horse's foot, when his feet INTERFERE, or when, with the shoe of one foot, he wounds the pastern of another.

This, Mr. WHITE says, is frequently occasioned by the horse's turning his toes outward. In such cases it is prevented by thickening the inner heel or branch of the shoe, by which this improper direction of the foot is altered; but whenever this accident happens, it is very necessary to ascertain what part of the hoof or shoe it is that inflicts the wound, as that will sometimes point out to us the means of preventing it. The speedy cut is frequently caused by an inward inclination of the toes; in such cases it is proper to thicken or raise the outer heel of the shoe. When a horse cuts with one foot only, the shoe of that foot which receives the injury is to be altered, and that part of the hoof which cuts is to be rasped.

CUTTING, or GELDING, a horse, is to render him impotent, after which he is called a GELDING, by way of distinction from a stonhorse. (See the article CASTRATION.) The best way to cure a horse of biting and kicking is to cut him.

CYNANCHE (κυανγχη, from κυων, a dog, and αγγω, to suffocate), that species of angina or quinsy in which the tongue is inflamed and swelled. Aretæus says, it is thus named from dogs, either being subject to it, or else, when in health, hanging out their tongues at times. Cyanche is the generic name for a quinsy



in Dr. Cullen's Nosology. There are many species.

**CYNANCHUM**, DOG'S-BANE, a genus in Linnæus's Botany. He enumerates fourteen species.

**CYNODONTES** (κυνodontες, from κυων, a dog, and οδων, a tooth), the canine teeth.

**CYNOREXIA**, the same as BULIMIA, *i. e.* a greedy appetite that is not easily satisfied.

**CYST** (κυστις, a bag); a term applied to any membranous receptacle of morbid humours which has no outlet.

**CYSTIC ARTERIES**. The hepatic artery in the human subject, and in many quadrupeds also, having advanced behind the ductus hepaticus towards the vesicula fellis, gives two principal branches, called by this name.

**CYSTIC VEINS**. These branch from the vena portæ ventralis. They run along the vesicula fellis, from its neck to the bottom; and,

as they are often only two in number, they are called *Cysticæ Gemellæ*.

**CYSTIC DUCT**, a pipe, or duct, that goes from the neck of the gall-bladder, not in a straight line with the latter, but, as it were, more depressed in the liver, into which some bilious ducts likewise open, and its inner membrane has several rugæ, to retard the motion of the bile. The horse, not having any gall-bladder, is of course without this.

**CYSTIC** is also applied to the arteries and veins communicating between the vena portæ and liver.

**CYSTICS**, medicines prescribed in any disorder of the bladder; because *cysticus*, from κυστις, a bladder, signifies any part of the body so called, as the urinary bladder or gall bladder.

**CYSTITIS**, inflammation of the urinary bladder.

**CYSTOCELE**, a hernia formed by the protrusion of the urinary bladder.

## D.

### D A R

**DANDRIFT**. See FURFUR.

**DAPPLE-BAY**, in the manege, is used for a horse which has marks of a dark-bay colour: such are also called *bays à miroir*. See the article COLOUR.

**DAPPLE-BLACK**, a black horse having spots or marks blacker and more shining than the rest of his skin. See COLOUR.

**DARTARS**, a kind of scab or ulceration on the chin, to which lambs are subject; and which, it is said, if not removed by some medical remedy, is apt to extend to the mouth, and at length prove fatal to them. According to the account given of this disease, washing the sores with vinegar, and using, externally, a salve made with equal parts of tar and hogslard, are effectual.

**DARTOS** (δαρτος). This supposed muscle appears to be no more than a condensation of the cellular membrane lining the scrotum in male animals; yet here the skin is capable of being corrugated and relaxed in a greater de-

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gree than in any other part. Dr. Hunter says, that no such muscle can be found in the human subject. The fibres which compose what is called the *dartos* are sometimes so affected as to contract the scrotum, and this contraction is generally said to be a sign of vigour in the animal.

**DEATH**, the permanent loss of sensibility, motion, and all the functions of animal life. Modern discoveries have evinced the possibility of a suspension of the powers of an animal, without that absolute extinction of the living principle which constitutes positive death; and if these facts have been demonstrated in the human, how much more are we to suppose them capable of demonstration in the brute subject? Indeed, a thousand accidental circumstances have occurred to prove, that the less perfect animals are tenacious of life, *i. e.* more capable of resuscitation from a state of apparent death, in proportion as they descend in the scale of animated beings. As the most useful

brute animals are not less liable to accidents than man, it is an object not unworthy of attention to employ the means of restoration in all such cases. Some of those, sheep more especially, from their natural helplessness, are frequently lost by drowning, by the severity of frost, by suffocation in the snow, and even, when fat, by falling on their backs, and being unable to recover their natural posture. Would it not, in any such case, be worth the farmer's while to employ, *with some degree of perseverance*, friction, moderate warmth, inflation of the lungs, cordial remedies injected into the stomach, &c. for the purposes of restoration? It certainly would.

**DEBILITY**, a state of weakness, emaciation, and inertness of the animal powers. It may be either general or local. In the human subject debility is a fertile source of diseases, chiefly of the chronic kind. So is it also in brutes to a certain degree, though their diseases are generally simple, and apt to proceed to a speedy termination. The diseases of debility in the horse are, dropsy, grease, asthma, palsy, &c.

**DECEIVED**. A horse is said to be deceived, when, upon a demivolt of one or two treads, working, for instance, to the right, and not having yet finished above half the demivolt, he is pressed one time or motion forwards with the inner leg, and then is put to a reprise upon the left in the same cadence with which he began. He thus regains the place where the demivolt had been begun to the right, and works to the left. A horse may in this manner be deceived on any hand.

**DECIDUA** (from *de* and *cedo*, to fall), a name given by Dr. Hunter to the spongy chorion, which consists of two layers: that in immediate contact with the uterus he calls *tunica decidua*; the other *decidua reflexa*, because it reflects from the uterus upon the ovum. About the fifth month, in women, these two come in contact, so as to become one membrane.

**DECOCTION** (from *decoquo*, to boil), any thing boiled. By this process the medicinal properties of roots, barks, &c. are communicated to water. The most common way is to boil the ingredients till the water is half consumed, the liquor (which, properly speaking, is the *decoction*), being afterwards strained off.

**DECORTICATION**, is stripping any thing of its bark or shell, from *de*, from, and *cortex*, bark.

**DECREPITATION**, is a term much used by Ludovicus and Wedelius for the crackling

noise which salt makes when put over the fire in a crucible.

**DEER**. See **CERVUS**.

**DEER's NECK**. See the article **NECK**.

**DEFECTS and FAULTS**, which ought chiefly to be avoided in buying a horse. See the article **BUYING**.

**DEFERENTIA VASA**, the vessels or tubes which convey the male semen into the urethra, in the act of coition. See **TESTICLE**.

**DEFENSATIVE**, a name given to a kind of plaster or covering, whereby surgeons keep on their dressings, and secure wounds from the effects of the atmosphere.

**DEFLAGRATION**, signifies burning away any thing by a rapid combustion. It is a term frequently used in chemistry.

**DEFLUXION**, signifies a running off, or flowing of any liquid (from *de* and *fluo*, to run off); and generally expresses the rheum in a catarrh, or a constant discharge of thin humours from a secreting surface.

**DELIQUIUM** (from *delinquo*), swooning or fainting. This word signifies the same as *Lipothymia*. It is also a term in chemistry, to signify the solution of a body by exposure to the air, as in making the oil of tartar per deliquium.

**DELIRIUM** (from *delirio*, to rave or talk idly), in human diseases, an incapacity in the organs of sensation to perform their functions, so that the mind does not reflect upon and judge of external objects as usual; as is the case frequently in fevers, from too impetuous or hurried circulation of the blood in the brain. How far brutes are capable of delirium cannot be ascertained; yet the outward signs of it are very evident in certain cases, as in the **STAGGERS** in horses.

**DELTOID** (*δελτοειδής*), a triangular muscle in the human subject, thus called from Δ, the Greek delta, and *εἶδος*, *forma*, *shape*. It arises exactly opposite to the trapezius from one-third part of the clavicle, from the acromium and spine of the scapula, and is inserted tendinous into the middle of the os humeri, which bone it lifts up directly; and it assists, with the supra-spinatus and coracobrachialis in all the actions of the humerus, except the depression. This muscle exists in the horse and some other quadrupeds. See **EXTERIOR**.

**DEMI-AIR**, or **DEMI-VOLT**, in the manege, one of the seven artificial motions of a horse; being an air in which his fore parts are more raised than in *terra a terra*; but the motion of the horse's legs is more quick in the latter than



in the demivolt. See the articles *TERRA A* and *VOLT*.

**DEMULCENTS**, such medicines as are supposed to obtund and soften acrimonious humours. See *EMOLLIENTS*.

**DENTITION**, the process of *TEETHING*; dangerous and troublesome to the young of the human species, who shed the whole of their first teeth, but attended with few accidents to inferior animals. See *AGE of a HORSE*.

**DEOBSTRUENTS** (from *de*, priv. and *obstruo*, to obstruct), such medicines as are supposed to open obstructions.

**DEPILATORY** (from *de*, of or from, and *pila*, hairs), a medicine which takes the hairs off from any place where they are a deformity. This, it is said, may be done with quick-lime, orpiment, &c. A medicine to make hair grow would, however, be a more valuable remedy in veterinary practice.

**DEPRESSION**, in surgery, signifies a sinking inwards of some part of the skull, in consequence of external violence, by which the bone is fractured.

**DEPRESSOR**, an instrument which is used for depressing the dura mater after the operation of the trepan.

**DEPRESSORS** (from *deprimo*, to press down), in anatomy, a name applied to several muscles, because they depress the parts they are fastened to. See the plates of the muscles of the horse, and their descriptions.

**DEPURATION**, the freeing any liquor or moist body from its foulness, which may be effected various ways. 1st, By decantation, by which, when the grosser parts are settled at the bottom of the vessel, the clear liquor above is poured off. 2dly, Despumation (see *CLARIFICATION*), in which eggs or other viscid matters are used. 3dly, Filtration, which is by passing, without pressure, the fluid to be purified through strainers of linen, flannel, or paper, which retaining the feculence, permits only the clear liquor to pass.

**DERIVATION**, the drawing away of humours that threaten any noble part, to be discharged by some other below, where there is not so much danger; as, in desfluxions upon the eyes, to apply a blister to a neighbouring part: and such a translocation of humours sometimes also proceeds from natural causes. The doctrine of derivation and revulsion, talked of by the ancients, is, in their sense of these terms, wholly exploded. By revulsion they meant the driving back of the fluids from one part to another. The only rational meaning the word

*revulsion*, as here applied, can have, is the preventing too great an afflux of humours to any part, either by contracting the area of the vessels, or diminishing the quantity of what flows from them. Thus, any medicines promoting the secretions may be said to make a revulsion; and, in this sense, *derivation* can only be understood.

**DESICCATIVE** (from *desicco*, to draw away or dry up), medicines used to dry up, or skin over, old sores. The old chemists also refer it (though improperly) to calcination.

**DESPUMATION** (from *de* and *spuma*, froth off), the clarification of any liquor, by throwing up its foulness in a froth, and taking that off. See *CLARIFICATION* and *DEPURATION*.

**DESQUAMATION** (from *de* priv. and *squama*, the scale of a fish), the taking off scales. By a metaphor it is applied to a foul bone, the laminae of which rise like scales. It is the same as *EXFOLIATION*.

**DESUDATION** (from *desudo*, to sweat off), a profuse and inordinate sweating, from what cause soever.

**DETERGENTS** (from *detergo*, to wipe off), a class of medicines supposed to cleanse and fill up with new flesh all ulcerations and foulnesses. Most applications which stimulate moderately are detergent; for instance, honey, lime-water, ægyptiacum, &c.

**DETONATION**, the explosion produced by fulminating substances, with a noise more forcible than the ordinary crackling of salts in calcination: as in the going off of the pulvis or aurum fulminans. It likewise is used to denote that noise which happens upon the mixture of fluids that rush into a violent combination; as oil of turpentine with vitriolic acid, which resembles the explosion of gunpowder.

**DEVIL'S DUNG**, a vulgar name for *ASSA FÆTIDA*.

**DEVUIDER**, a term used in the horse-academies, to denote a horse that, in working upon volts, makes his shoulders go too fast for his croup to follow; so that, instead of going upon two treads, as he ought, he endeavours to go only upon one, which comes from the resistance he makes in defending against the heels, or from the fault of the horseman that is too hasty with his hand. See the article *HASTEN*.

**DIABETES**, or *PROFUSE STALING*. This disease may be known by an immoderate discharge of pale urine, accompanied with a coldness of the skin, staring of the hair, weak

pulse, loss of appetite, constant thirst, and general debility.

The causes of the diabetes are those in general which dispose an animal to hydropic affections. Mr. DENNY attributes it, in many instances, to bad forage, particularly of oats damaged by salt water.

This, he says, is so very frequent a disease in regiments of cavalry, that he has seen "*more than a hundred horses labouring under it at one time.*" In these instances, however, the disease can hardly be supposed to have arisen from general debility, or any chronic affection, since we are told, that, though many remedies have been proposed for the cure of this disease, it will *always* be sufficient to observe the following treatment.

"On the first discovery of the disease give the following ball morning and night :

Take of Alum, in powder, two drachms ;  
Armenian bole,  
Peruvian bark, in powder, of each  
half an ounce ;  
Ginger, in powder, two drachms ;  
Treacle, enough to make a ball.

"Mashes may be given two or three times daily, to keep the bowels open ; and a moderate quantity of lime-water should be administered for drink. Walking exercise should be allowed, and also warm clothing. The skin of the animal should be well rubbed, and particularly the legs.

"When the disease is removed, the horse's food should be of the best quality."

If the chronic diabetes of the horse yield to this treatment, we certainly have no reason to consider it a formidable malady. That veteran of his time, GIBSON, however, represents the "*true diabetes*" as a disease difficult of cure, and for this simple and convincing reason, that it is the result of debility from "*long-continued sickness, old surfeits, or the effect of hard riding or hard labour,*" accompanied with poor diet.

Mr. JOHN LAWRENCE too speaks of this disease as an indication of a broken constitution (as it certainly is in the human subject), and holds out little encouragement for attempting the cure. When it is thought worth while, he recommends bark, gums, bole, chalk, log-wood, and lime-water.

Mr. RYDER gives the following formula :

Take of Peruvian bark, in fine powder,  
twelve ounces ;

Grains of paradise, two ounces ;

Gentian, in powder, three ounces ;

Honey sufficient to form sixteen  
balls.

One of these balls he directs to be given every morning.

DIABOTANUM (from *βοτανη*, an herb), the name of a plaster prepared of herbs.

DIACHYLON (*διαχυλων*), originally an emollient digestive plaster, made of certain vegetable juices. This name, however, is given to very different compositions, and is now the *emplastrum lithargyri*, or *litharge plaster*, which is made by gently boiling litharge and oil together over the fire till the latter is dissolved.

DIACHYLON WITH GUMS, a compound of litharge plaster, galbanum, turpentine, and frankincense.

DIACODION (*διακωδιων*, from *δια* and *κωδια*, or *κωδεια*, a poppy-head). *Codia* signifies the top or head of any plant, but by way of eminence particularly the poppy. It is the syrup made with the heads of white poppies.

DIÆRESIS (*διαίρεσις*, from *διαίρεω*, to divide or separate), denotes any solution of continuity; though, in surgery, it usually means that division of operations by which parts morbidly or preternaturally concreted, are divided.

DIAGNOSTIC (*διαγνωσις*, from *δια*, per, through, and *γινωσκω*, cognosco, to know), that judgment of a disease that is taken from the present symptoms and condition of the patient.

DIALTHÆA, the name of an ointment in Myrepsus, from which the ointment of althæa, now in use, seems to have been taken.

DIANISUM, an article from the old London dispensatory, consisting of a jumble of aromatic ingredients, united with a small proportion of anniseeds in powder. It was administered as "*a pectoral cordial, and expeller of wind,*" to cattle of different descriptions.

DIAPENTE, a powder, consisting of gentian, birthwort, bay-berries, and myrrh, in equal proportions. It was formerly in great repute with common farriers and cow-doctors, who have given it the character of "*a good antidote against sickness and all manner of infection.*"

DIAPHORESIS (*διαφορησις*, from *διαφορεω*, of *δια*, through, and *φερω*, to carry), a sweating, or elimination of the humours through the pores of the skin. See SWEATING.



DIAPHORETICS (*διαφορητικά*), are those medicines which procure sweat.

DIAPHRAGM, vulgarly called the MIDRIFF or SKIRT, a muscular substance in a horse, bullock, or other quadruped, which divides the upper cavity, or CHEST, from the ABDOMEN, or lower belly. It takes its origin from the loins, and is inserted into the lower part of the breast-bone, and the five inferior ribs, by which it makes several points. The middle is a flat tendinous substance, from whence the fleshy fibres begin, and are distributed like rays from a centre to its circumference. When this muscle acts alone, it contracts the breast, and pulls the ribs downwards, by which it assists the muscles of the lower belly in the expulsion of the fæces: but its chief office is in respiration, to which all the muscles of the breast, the intercostals, and those of the lower belly, are more or less subservient.

In all the actions of respiration or breathing, the muscles of the breast have the greatest force in men: but in horses, and some other creatures of a prone position, it is evident the diaphragm has also a very great force, which seems to be plain in broken-winded horses; many of which have no other indication but that this is stretched or relaxed in a very extraordinary manner. In such cases, the membranous fibres are for the most part extremely thin, and the tendinous parts, towards their insertions into the ribs, very small and feeble, by which means it loses a great deal of that force and spring that is necessary to its action.

When a horse, or any other animal, receives the air into his lungs, the breast and ribs are distended, which is done by the dilatations of the pectoral muscles, by the extension of the intercostals, viz. the muscles of the ribs, and by the diaphragm, which at that time is drawn out and expanded to its full dimensions, or in proportion to the quantity of air received into the lungs. The muscles of the abdomen act also by their connection with those of the breast and ribs, which we perceive more plainly in quadrupeds than in men, where the lungs are upon a level with the parts of the lower belly. On the other hand, when the air passes out of the lungs, the muscles that draw in or compress the breast, and those that compress the ribs, act alternately with the extensors of the breast and ribs. The diaphragm, which is stretched out in time of inspiration, contracts, and in its centre rises upwards like the bottom of a dish.

DIARRHŒA, otherwise called LAX, or SCOURING, in cattle. This disease, in the horse,

is distinguished by a frequent discharge of fæces, accompanied with pain, restlessness, and loss of appetite. After the second day the discharge is chiefly mucous, or mixed with small and hard lumps of fæces, covered with an oily matter. Mr. DENNY observes, that when the disease has been too long neglected, and that the discharge becomes involuntary, accompanied with coldness of the legs, a fatal termination will generally ensue.

The disease, he says, may arise from debility, mucus irritating the intestines, violent exercise, drinking large quantities of cold water when the body is heated, and, lastly, from worms.

Diarrhœa sometimes occurs after acute diseases, and in such instances frequently proves salutary; but others, arising from various causes, ought, if possible, to be removed by medicine. These vary, and require different modes of treatment.

1. A *critical diarrhœa* is accompanied with debility. Powerful astringents must be avoided, and such gently stimulating medicines only employed as will have a tonic effect in restoring the healthy functions of the intestines. To accomplish this end, Mr. Denny advises that the following ball should be given:

Take of Calomel, one drachm;  
Aloes,  
Cinnamon,  
Ginger, each two drachms;  
Treacle, enough to make a ball.

Twelve hours after, we are directed to give the following ball, and to repeat it morning and night:

Take of Coriander seeds,  
Carraway seeds, in powder, of each  
half an ounce;  
Ginger,  
Rhubarb,  
Armenian bole, of each two drachms;  
Treacle, enough to make a ball.

The diet should consist of masses of oatmeal and bran, or malt, not made too moist: and a handful of bran may be boiled in the water intended for drink, which should be given sparingly.

2. In diarrhœa arising from violent exercise, or from drinking large quantities of water, Mr. Denny says the following methods may be employed. If the horse be valuable, let the following draught be given, and repeated six hours after, if needful.

Take of Cinnamon,  
Cloves,  
Ginger, in powder, of each two  
drachms;  
Brandy, four ounces;  
Tincture of opium, two drachms;  
Gruel, one pint:  
Mix them.

The horse's body should be well rubbed with flannel, and he should be kept warmly clothed.

An hour after the above mixture, a warm mash may be given. Plenty of good bedding should be allowed, and the stable kept quiet, to favour the animal's rest. If this treatment cannot be complied with, the following mixture may be given every three hours, until the symptoms are relieved.

Take of Carraway seeds,  
Coriander seeds, of each, bruised,  
one ounce;  
Ginger, in powder, two drachms;  
Gruel, two quarts;  
Boil them for eight minutes; then strain,  
and add  
Tincture of opium, two drachms:  
Mix them, and let the whole be  
given warm.

For the treatment of this disease in horned cattle, see the article CATTLE.

DIARTHROSIS (*διαρθρωσις*, from *δια*, *per*, and *αρθρον*, *a joint*), is that species of articulation which is moveable. The late Dr. William Hunter reckoned it to consist of three species. 1. The Enarthrosis, or ball and socket; namely, when a large head is received into a superficial cavity. 2. Arthrodia, which is when a round head is received into a superficial cavity. These two kinds admit of a motion on all sides. 3. Ginglymus, which is when the parts of the bones mutually receive and are received. This kind of articulation only admits of flexion and extension. In surgery this word expresses those operations by which the reposition of parts displaced is effected.

DIASCORDIUM, so called from the scordium in it. It is now called *Eletharium e Scordis*. See SCORDIUM.

DIASTOLE (*διαστολή*, from *δια*, and *στέλλω*, *to contract*, *to stretch*), signifies the dilatation of the heart, auricles, and arteries; and stands opposed to the SYSTOLE, or contraction of the same parts. See HEART.

DIATESSARON (from *δια*, and *τεσσαρες*, *four*), a compound medicine, so called because made of four ingredients.

DIATHESIS (from *διαίθεσις*, *to dispose*), any particular disposition of an animal's body, either good or bad, with respect to its health.

DIET, such select articles of food as, when persevered in, are likely either to preserve health, or to assist the operation of medicine in the cure of a disease. Mr. Clark's account of the diet proper for sick horses affords us the following remarks.

He says, it may be observed, that, in some diseases, even of the inflammatory kind, some horses retain their appetite for food in a degree, whilst others, when very sick, refuse every kind of sustenance. In the former case, it ought to be given in a small quantity at a time, and frequently repeated; it should be of the softest kind, scalded bran, boiled barley, malt, or dry bran, if the horse refuse soft food. When a horse refuses food of every kind, it is too common to force it upon him, by pouring wine sops, &c. down his throat, under the apprehension that the horse will die for want of nourishment. This, however, is not the case: if the animal loaths food, it is a certain sign that he is disordered, and therefore cannot digest it; and the throwing or forcing it into the stomach will serve only to aggravate the disorder under which he labours, by increasing that oppression which already prevails. It is farther to be observed, that the stomach of a horse has not the faculty of vomiting, or even belching up wind by the mouth, which, in such cases, might give relief. If a horse will drink water freely, Mr. Clark considers that the best medicine in such a situation, as it dilutes the contents of the stomach, and thus affords an easier passage for them into the intestines. For these reasons, he insists, that no food whatever should be forced on sick horses; neither should they even be tempted with oats, or other relishing food, as it is by no means proper for them in such a situation, although they should seem disposed to take it, which they frequently will by way of change.

If, however, the existence of the animal, or his recovery, seem to be endangered by a continued rejection of food, it should be remembered that art furnishes us with another resource to support him, namely, by clysters. That nourishment may be conveyed to an animal body by this means is well known: (see CLYSTER). After the intestines have been emptied of excrement, by clysters of warm water, or of very thin water-gruel, in which a handful of common salt, or a few ounces of Glauber's salt, have been dissolved, nourishing clysters, composed of two or three quarts of thick water-



gruel, may then be injected, and repeated as often as may be thought necessary. There is, in fact, no danger of a horse's suffering from the want of nourishment by the mouth in a fever; but there is great danger to be apprehended from its being forced on him, when the stomach cannot digest it. After the great intestines have been thoroughly emptied of the hardened excrements by clysters, the contents of the stomach will find an easy passage into the smaller ones. The horse then naturally craves fresh aliment; but, when this takes place, there will be danger in indulging him with too much at once; and this should by all means be guarded against.

In the treatment of the diseases of every other animal, it must be obvious, that an attention to the circumstance of *diet* is of the utmost importance.

**DIETETICS**, is that part of physic which considers the way of living with relation to food, or diet, suitable to any particular case.

**DIGASTRICUS** (from *dis*, *bis*, *twice*, and *γαστρῶν*, *venter*, *a belly*), a muscle so called from its double belly. It arises fleshy from the upper part of the processus mastoideus, and descending, it contracts into a round tendon, which passes through the stylohyoidæus, and an annular ligament which is fastened to the os hyoides; then it grows fleshy again, and ascends towards the middle of the edge of the lower jaw, where it is inserted. When it acts, it pulls the lower jaw down.

**DIGESTION**, in the animal economy, the dissolution or separation of the aliments into such minute parts as are fit to enter the lacteal vessels, and circulate with the mass of blood; or it is the simple breaking of the cohesion of all the little molecule which compose the substances men and animals feed upon. Now the principal agents employed in this action are, first, the saliva, the juice of the glands in the stomach, and the liquors drank, whose chief property is to soften the aliment, as they are fluids which easily enter the pores of most bodies, and, swelling them, break their most intimate cohesions. And how prodigious a force fluids acting in such a manner have, may be learned from the force that water, with which a rope is wetted, has to raise a weight fastened to and sustained at one end of it; and this force is much augmented by the impact which the heat of the stomach gives to the particles of the fluid: nor does this heat promote digestion only thus, but likewise by rarefying the air contained in the pores of the food, which helps to burst its parts asunder. And therefore such liquors as are

most fluid, or whose particles have the least viscosity, are most proper for digestion, because they can most easily insinuate themselves into the pores of the aliments; and, of all others, water, the almost universal beverage of created beings, seems to be the fittest for this use. Aromatic substances, and indeed the whole class of stimulants employed as medicine, seem to help digestion, as they excite the coats of the stomach to a stronger contraction; and, therefore, when they are duly diluted, they may not only be useful, but occasionally requisite. When the food is thus prepared, its parts are soon separated from one another, and mingled with the liquors in the stomach, from whence it is propelled into the duodenum, where it mixes with the pancreatic juice and bile from the liver. The **CHYLE** is thence absorbed, and carried into the circulation by means of the lacteal vessels, whose extremities open into the intestinal canal for that purpose. Digestion is performed under different circumstances according to the peculiarity of structure of the digestive organs in different animals, and of the substances on which they are destined by nature to feed. For farther observations on this head see the article **STOMACH**.

**DIGESTION**, in chemistry, is that solution of bodies which is made by menstrua. See **MENSTRUUM** and **SOLUTION**.

**DIGESTIVES**, are such unguents, balsams, or other particular preparations, as, being applied to wounds, tend to cleanse, fill them with healthy granulations, and promote the discharge of a laudable matter. Of this class are **BASILICON** and such other salves as contain the turpentine or stimulating gums. The following formulæ are given by Mr. DENNY, a late veterinary writer.

#### *Digestive Ointment.*

Take of Olive oil, one pint;  
Yellow wax,  
Yellow resin, of each one pound;  
Common turpentine, half a pound.  
Melt the wax and resin with the oil over a slow fire; then take them off, add the turpentine, and strain the mixture while it remains hot.

#### *Green Digestive.*

Take of Digestive ointment, eight ounces;  
Olive oil, three ounces;  
Verdigrise, finely powdered, one ounce.  
Melt them together.

Many other recipes might be given, but these are as effectual as any.

**DIGITALIS**, fox-glove, a genus in Linneus's botany. He enumerates nine species. The college have introduced the herb *Digitalis Purpurea* Lin. into their pharmacopœia; and it has been given in powder, and in decoction. Its effects on the human body have been powerful to a degree approaching to deleterious. It seems well worth while to ascertain its effects on brutes.

**DILATOR** (from *dilatare*, to enlarge or widen), an epithet added to the name of certain muscles, whose use is to dilate or open some part; as the dilators of the nostrils. They are small thin muscles, having a double order of fibres decussating each other. They rise from the interior and inferior parts of the os maxillarium, and are soon inserted to the superior parts of the alæ. They pull up the alæ, and dilate the nostrils. See *f*, in Pl. II. and the description of muscles in "*the head*," under **ANATOMY**.

**DILUENTS**. To *dilute* is to thin a fluid by the addition of a thinner thereto; and such things are called *diluents*, or *dilutors*. Of this kind are common whey, ptisans, and bran decoction; which, in respect of the blood in a state of viscosity, are thinner than it, and therefore are said to thin it.

**DIPLOE** (from *διπλοῦς*, double), the soft part between the two tables of the bones of the skull. This part is spongy or porous in all animals, contains the marrow, and gives a passage to blood-vessels.

**DIPLOMA** (from *διπλωω*, to fold), the written instrument which gives authority to a medical man to practise. The **VETERINARY COLLEGE**, after a *most strict examination* as to all the points necessary to qualify the pupils, confer *diplomas*. Used in a chemical sense, to boil in *diplmate* is to set one vessel, containing the ingredients intended to be acted upon, in another larger vessel full of water; and to this latter vessel the fire is applied.

**DIRECTOR** (from *dirigo*, to direct), a grooved instrument for guiding an incision-knife in opening sinuses, abscesses, &c.

**DISARM**, in the manege. To disarm the lips of a horse is to keep them subject, and out from above the bars, when they are so large as to cover the bars, and prevent the true pressure or appui of the mouth, by bearing up the bit, and so hindering the horse from feeling the effects of it upon the bars.

**DISCUTIENTS**, a name applied to such medicines as have a power to repel or drive

back the morbid matter of a tumour into the blood, without permitting it to do farther mischief. Most remedies of this class act by stimulating the absorbent vessels of the part affected. Such may be reckoned solutions of sal armoniac in vinegar, saponaceous and volatile embrocations, and certain plasters which bear that appellation.

**DISEASE**, that state of an animal in which there is such an alteration of the chemical properties of the fluids or solids, or of their organization, or of the action of the moving power, as to produce an inability or difficulty of performing the functions of the whole or any part of the system, or pain, or a preternatural evacuation. Diseases are either general, idiopathic or primary, local, sympathetic, or symptomatic; and it is necessary to a right treatment of the diseases of animals, that the veterinary practitioner should have clear ideas as to these points before he attempts to apply his remedies.

The general management of horses, when sick, is very judiciously treated of by Mr. CLARK of Edinburgh. He observes, that the diseases to which horses are liable have a great analogy to those of the human body: at the same time that they are almost as numerous.

He considers a question which naturally occurs, viz. how it happens that horses are so liable to such a numerous train of diseases more than other animals of the brute creation? The answer is found in their artificial state of existence: they are more domesticated than other animals, the dog only excepted; and even the latter is left more at liberty than the former. The horse, in his natural state, affords no instances of disease; neither is it found that horses are liable to diseases when left to run wild in different parts of Britain. Nay, it is likewise a fact, that young horses are exempt from disease while running at liberty in a country somewhat distant from towns or villages. They seem, even there, to enjoy a perfect state of health, till they are taken into stables, and come more immediately under the direction of man; it is then that this great change seems to take place in their constitutions. Hence it may be justly inferred, that their proneness to disease arises solely from the treatment they are subjected to, from the musty, close, hot, foul, aired, damp stables, &c. they are confined in; from a sort of food not, strictly speaking, natural to them; from other errors in their diet, drink, &c.; from the want of free air and exercise, or from the excess of the latter; from the sudden transitions they are compelled to un-



d-ergo, from heat to cold, and from cold to heat; from suffering them to drink cold water, or plunging them into cold water when overheated; neglect of proper friction or dressing, &c. &c.

"On considering the variety of diseases to which horses are liable in a domesticated state," says Mr. Clark, "it is surprising what affinity there is in the symptoms attending each of them, with those which take place in the human body in the like situation; inasmuch that, if the symptoms attending any one of the diseases to which horses are liable were faithfully related to a physician, although he never saw a sick horse, yet he could from thence name the disease under which the horse laboured at the time. From these, and a variety of other arguments which might be offered, it will be obvious, that the cure of the diseases in horses must depend upon the same principles as those of the human body, and that the prevention of diseases in the former must likewise depend on obviating the *causes* which dispose and render them liable to these diseases."

For some farther remarks of this judicious writer on the management of horses when sick, see the articles FEVER and DIET.

**DISLOCATION** (from *dis*, and *locus*, a place), the putting out of its place. It is the same as LUXATION.

**DISPENSARY**, the place or shop where medicines are prepared. A *Dispensatory* is a book treating of the composition of medicines.

**DISSECTION** (from *disseco*, to cut), the cutting up a body with a view of examining the structure of its parts, or the morbid appearances after death. In the investigation of the causes of disease, the dissection of animals is of the utmost importance, and the veterinary surgeon should be careful not to let slip any opportunities that present themselves for acquiring knowledge and making useful discoveries by this means. In the dissection of large animals, such as the cow, the horse, &c. the commonest implements only are required, and these may be had in every situation.

**DISSOLUTION**, is a term very laxly used in pharmacy, to signify the dissolving or making thinner any substances. A syncope is also thus named, and so is death.

**DISTEMPER**, a word used by the old writers synonymously with DISEASE; but, with the moderns, rather confined to those morbid affections that are contagious. It is often used vaguely to describe a sickness or indisposition the nature of which is not understood. Thus we hear of the "distemper" in cows, dogs, &c.

Mr. RYDER, a late veterinary writer, has given this name to a contagious affection in the horse, which he describes in the following terms:

"In England," says he, "horses are extremely subject to receive injury from the sudden changes which take place in the temperature of the atmosphere, particularly during the spring and autumn quarters: the moisture of the air at these periods, combined with the heat, is very apt to produce inflammation of the mucous membranes, coughs, and sometimes inflammation of the lungs. When this inflammation and cough is attended with a discharge of matter from the nostrils, it constitutes a disease which is called the Distemper, for which every farrier thinks that he has an infallible antidote; but it is frequently found that a number of valuable horses fall victims to this disease, which we conceive may be owing to the error of treatment.

"The principal symptoms observable in the distemper are, first, a slight inflammation of the top of the throat, attended with a cough, which becomes more frequent and violent, particularly when the patient attempts to swallow his food; the action of the heart and arteries is increased, and the pulse is more quick and hard, with some degree of fever; the tongue is very hot and white, but not always dry, being sometimes covered with tough mucus; and, when difficulty of breathing is joined to these symptoms, we have great reason to apprehend that the lungs are affected.

"There is very little appearance of any enlargement of the external glands about the neck, or under the jaw, as in strangles; the inflammation being principally confined to the throat, windpipe, and adjacent parts, which appear much tumified and sore.

"Where no medicines have been given, or any operation used, this disease terminates by a critical purging, but more frequently by a large secretion of matter from the nostrils. The method of practice we have found most effectual for the cure of the distemper is as follows:

"Frequent bleeding in small quantities, about three pints at a time, and a hair bag, containing a large mash, nearly scalding hot, should be fastened on the head, and round the nostrils, so as the patient may inhale the whole of the hot steam; and the mash should be changed four or five times a-day. This will relax the inflammation of the throat, and promote a more free discharge of matter from the nostrils.

"If there be much fever, which is gene-

rally the case, half an ounce of nitre, dissolved in two quarts of water in which bran has been steeped, may be given, a little warm, at one time, or used as his ordinary drink. And if there be any difficulty in his breathing, the bleeding may be increased to three or four quarts the first time, and afterwards in small quantities, or as symptoms may direct.

"The horse should be moderately warm clothed, and should frequently be gently exercised; and if oats are given, they should be bruised, and steeped in hot water.

"In the place of hay, fresh grass, where it can be procured, will be found the best diet, as it has a tendency to keep the body cool, and gently open the intestines."

**DISTILLATION**, in chemistry, the act of drawing off the spirituous, aqueous, oleaginous, or saline parts of a mixed body, from the grosser and more terrestrial parts, by means of fire, and collecting and condensing them again by cold. There are two kinds of distillation: by the one, the more subtle and volatile parts of liquors are elevated from the grosser; by the other, liquids incorporated with solid bodies are forced out from them by vehemence of fire. To the first belong the distillation of the pure inflammable spirit from vinous liquors; and of such of the active parts of vegetables as are capable of being extracted by boiling water or spirit, and at the same time of arising along with their steam. The apparatus made use of for distilling spirits, waters, and oils, consist of a still or copper vessel for containing the subject, on which is luted a large head with a swan-neck. The vapour arising into the head is thence conveyed through a worm, or long spiral pipe, placed in a vessel of cold water, called a *refrigeratory*; and being there condensed, runs down into a receiver. The subjects of the second kind of distillation are, the gross oils of vegetables and animals, the mineral acid spirits, and the metallic fluid quicksilver, which, as they require a much stronger degree of heat to raise them than the foregoing liquors can sustain, so they likewise condense without arising so far from the action of the fire. The distillation of these is performed in low glass vessels, called, from their neck being bent to one side, *retorts*: to the farther end of the neck a receiver is luted, which standing without the furnace, the vapours soon condense in it without the use of a refrigeratory.

**DISTORTION** (from *distorqueo*, to set awry). This term is usually applied to bones bending to one side. It is also said of the eyes, when they seem to turn from the object looked at, as

in squinting. The legs and feet of horses are liable to distortion, and this materially affects their powers of progression.

**DISUNITE**, in the manege. A horse is said to *disunite* that drags his haunches, that gallops false, or upon a wrong foot.

**DIURESIS** (from *diu*, *per*, *through*, and *psu*, *fluo*, to flow), a term used to express that separation which is made of the urine by the kidneys; and what most promotes such a separation is called *diuretic*. It also signifies a diabetes.

**DIURETICS**. Under this head are included those medicines whose most remarkable properties are those of increasing the discharge by urine, or which are popularly said to remove obstructions in the urinary passages.

Mr. CLARK observes, that diuretic medicines are supposed to lubricate or soften the fibres which compose the urinary glands and canals, and, by their attenuating and deterfise properties, rarefy and thin viscous humours, so as to render them fit to pass through these canals, which they could not before do: but, whatever may be their *modus operandi*, he says they are of singular use in promoting the discharge by urine, by which diseases are not only frequently relieved, but actually cured with expedition. In many cases, he adds, where purging medicines are prescribed, diuretics would be preferable, as they may be used with greater safety; more especially when it is considered, that the chief effect of either of these prescriptions is only that of lessening the quantity of fluids in the body. Hence it will appear how salutary and beneficial medicines of this kind are to horses in a great variety of cases, but more particularly in those where any obstruction has taken place in the urinary vessels, attended with *difficulty in staling*, a complaint which horses are very subject to, owing to a variety of circumstances. It must likewise be obvious how necessary it is to allow horses upon a journey, or travelling long stages, to stand still at times, in order to let them stale. From a neglect of this many horses are killed; for, when the bladder has been distended beyond its natural dimensions, it has become paralytic, and lost the power of contracting again for some time, so as to expel the urine. Hence arise dangerous symptoms, which, if not speedily relieved, prove fatal. Besides, when the urine is too long retained in the bladder, it is not only reabsorbed into the mass of fluids, but, by stagnating, becomes thicker, and the more watery parts being carried off, the mucilaginous and earthy parts remain behind; and the ten-



dency which these particles have to concrete may promote the formation of solid substances in the bladder.

Diuretic medicines are most frequently administered in the form of balls; but, in some circumstances, they may be given in the form of powders in the horse's food. Nitre is not only an alterative, but it acts as a powerful diuretic to horses; and, in some cases, may be given from one to four ounces a-day, according as circumstances may require.

To cart-horses, or those of robust constitutions, from one to three or four ounces of yellow resin in powder may be put into the food, and repeated two or three times at proper intervals, according as it is found to operate, in cases of swelled legs, greasy heels, &c.; and it ought always to be observed, that, when diuretic medicines are given, the horse should be indulged with plenty of water to drink during the time of their operation.

Mr. CLARK says, the cases which require diuretic medicines, and which occur most frequently, are these:—When difficulty is observed in a horse's making water, or when there are frequent attacks of the strangury, or suppression of urine; when the urine appears too thick, turbid, or discoloured, whether it be red, yellow, or black; when there are symptoms of any latent disorder, attended with a dulness or heaviness in the horse's looks, a staring dusty-like coat, local swellings on any part of the body, as on the belly, sheath, or legs; running sores about the latter, called the grease, &c.; in cases where there are eruptions or pustules on the surface of the skin, or when the horse appears itchy, and frequently rubbing himself against the stall, &c.; or in rubbing one leg against the other, although no eruption appears on the skin; in running thrushes, cracks, or ulcers about the heels; in baldness, or losing the hair on different parts of the body. In most of the cases where a course of diuretic medicines are required, bleeding will be necessary before they are given. Nor must regular exercise by any means be omitted, even during the time they are operating. The use of diuretics should not be continued too long, however, at one time, as they weaken the body considerably. Hence, as soon as the disorder for which they were given is removed or abated, they should be left off.

We have given some formulæ for diuretic remedies under the article BALL. The following are from Mr. DENNY, a late veterinary writer.

*Diuretic Balls.*

No. 1.

Take of Nitre, in powder,  
Yellow resin, in powder,  
Castile soap, of each half an ounce;  
Venice turpentine, enough to form a ball.

No. 2.

Take of Camphor, in powder, two drachms;  
Yellow resin, in powder,  
Venice turpentine,  
Castile soap, of each half an ounce;  
Oil of juniper, sixty drops:  
Mix, and form them into a ball.

No. 3.

Take of Yellow resin, in powder,  
Venice turpentine,  
Castile soap, of each half an ounce;  
Oil of Aniseed, sixty drops.  
Mix them into a ball.

DOCK, a large case of leather, as long as the dock of a horse's tail, which serves it for a cover, and is made fast by straps to the crupper, having leather thongs that pass between his thighs, and all along the flanks to the saddle-straps, in order to keep the tail tight, and to hinder it from whisking about.

DOCKING, the operation of cutting off a horse's tail (see CURTAIL). The manner of performing it has long been this: "First, feel with your finger and thumb, till you have found the third joint from the setting-on of the horse's tail, then raise up all the hair, and turn it backwards; then taking a very small cord, and wrapping it about that joint, and pulling it as tight as possible, take a piece of wood, with the end smooth and even, and just the height of the horse's tail. Set it between the horse's hinder legs, having first trammelled all his four legs, so that he cannot stir. Lay his tail upon the wood, and, having a very sharp strong knife made for that purpose, set the edge of it as near as possible between the fourth and fifth joint. Then, with a large smith's hammer, strike the back of the knife, and cut the tail off. If any blood issue, the cord is not tight enough, and should be drawn straiter: but if no blood follow, take a red-hot iron, made of a round form, of the full compass of flesh of the horse's tail, and with this fear the flesh till it be encrusted, so that the blood cannot break out. Then loose the cord; and, after two or three

says, when the fore begins to discharge, anoint it with hog's grease and turpentine till it be healed."

The following improvement is suggested by Mr. John Lawrence.

"I had heard," says that writer, "of many accidents, some of them fatal, from horses being docked at too late a period, and by bungling blacksmiths; and indeed I had seen several operations of the kind which made me sick. It occurred to me, that colts ought to be docked early, whilst the bones of the tail are tender and grisley; and this operation I ever afterwards performed upon my own myself, with a good sharp kitchen-knife, with all possible success, and which I wish to recommend as a general custom. The two last I docked were, one about three months, the other about three weeks, old; the one got by a cart, the other by a bred horse. These colts were perfectly tame and handy (a state in which I always chuse to have them); and, whilst eating a few carrots, they suffered me to tie their hair up *secundum artem*, and to make the stroke, which curtailed them in an instant, and with so little pain, that they scarcely left their carrots. The usual quantity taken off agrees in length with the width of a man's hand; but perhaps it ought to be rather more, from the consideration of its being done so early. The bred colt was so indifferent about the matter, that he suffered me, about half an hour afterwards, to lay hold of his tail again, and make a ligature to stop the blood. If a flux of blood be not desired, a ligature may be made *previous* to the operation; but, in case of plethora, dullness, or heaviness about the head and eyes, it may be presumed that bleeding will benefit the colt, and the wound may be entirely neglected. If any application be thought necessary, nothing is so proper as French brandy. No twitching, trammelling, scaring with hot irons, nor any of the Vulcanian apparatus, is here required; and, what will weigh more than all the rest with certain of my readers—no farrier's bill."

DOCTOR, a title vulgarly given to a common farrier or blacksmith, who, because he shoes horses, is thought capable of treating their diseases. There are not only *horse-doctors*, but *cow-doctors*, *dog-doctors*, &c. We should more justly name these gentlemen, who, without having any *principles* to guide them, are very forward in using the most powerful remedies, *horse-lamers*, *cow-killers*, and *dog-destroyers*. Happily, the light is dawning on this hitherto-benighted science, in the labours of the VETERINARY COLLEGE, which have already

produced a considerable revolution in the public mind on the subject of treating the diseases of domestic animals.

DOG, a domestic animal, of acknowledged value to man, as contributing to his amusement, his convenience, and his personal security. The natural history of the dog, and the accounts of his species and varieties, are extremely interesting; but with these we have nothing to do, as having no connection with his diseases, which alone form the subject of veterinary investigation. Our means of information in the latter respect are miserably scanty. The medical enquiries of man have, till of late years, been almost exclusively confined to objects in which his own health and safety have been concerned. Humanity to animals, however, to the credit of the present age, takes now a more extensive range, and will not limit our future investigations even to the point at which it has been usual for the most enthusiastic veterinarian to stop—we mean that class of animals devoted to *human sustenance*. Under these impressions, scanty, nay, contemptible, as our materials are, we cannot but state the little that even ignorance has recorded of the diseases of the dog. Some preliminary observations, however, may be necessary on the *means of keeping that animal in health*.

This very much depends on their diet and lodging: frequent cleaning their kennels, and giving them fresh straw to lie on, is very necessary; or, in summer-time, deal-shavings, or sand, instead of straw, will check the breeding of fleas. If you rub your dog with chalk, and brush and comb him once or twice a-week, he will thrive much better; the chalk will clear his skin from all greasiness; and he will be the less liable to be mangy. A dog should never be without clean water by him, that he may drink when he is thirsty. In regard to food, carrion is by no means proper. Barley-meal, the dross of wheat-flour, or both mixed together, with broth or skimmed milk, is very good food. For change, a small quantity of greaves, from which the tallow is pressed by the chandlers, mixed with the flour, or sheeps' feet well baked or boiled, are a very good diet; and when you indulge them with flesh, it should always be boiled. In the season of hunting, it is proper to feed them on the evening before; and give them nothing in the morning you intend to take them out, except a little milk. If you stop for your own refreshment in the day, you should also refresh your dogs with a little bread and milk. These animals, being of a hot constitution, eat, what is of the greatest relief to them in summer,



namely, *twitch* or *dog* grafs; therefore plant fome of it in a place where you can turn them into every morning: they will feed freely on it, to be cured of the ficknefs they are fubject to; but unlefs the grafs be of this fort it will have no effect.

The moft common of the *difeafes and accidents* of DOGS are:

1. *Bites and Stings*. If dogs are bitten by any venomous creatures, as vipers, fnakes, &c. fqueeze out the blood, and wafh the place with falt of tartar and water; then lay a plafter to it made of turpentine and treacle.

2. *Mange*. Dogs are fubject to the mange from being fed too high, and allowed no exercife, or an opportunity of refrefhing themfelves with dog-grafs; or elfe by being ftarved at home, which will caufe them to eat the vileft ftuff abroad, fuch as carrion, or even human excrement; or by want of water; and fometimes by not being kept clean in the kennel. Thefe will probably heat the blood, and have a tendency to make them mangy. The cure, we are told, confifts in giving them flowers of brimftone, either in milk or mixed up with butter, and rubbing them well every day for a week with an ointment made of fome of the brimftone and lard, to which fhould be added a fmall quantity of oil of turpentine. Or, boil four ounces of quickfilver in two quarts of water to half the quantity; bathe them every day with this water, and let them alfo have fome of it to lap. Or, a fmall quantity of weak mercurial ointment may be rubbed on the parts on its firft appearance. This will alfo free lousy puppies from their lice. Or,

Take of Euphorbium, two ounces;

Flowers of fulphur,

Oil of bays,

Soft foap, of each four ounces. Mix.

Anoint the dog with it every other day.

3. *Poifon*. If you fufpect your dog to be poifoned with *nux vomica* (the poifon ufually employed by the warreners, which caufes convulfive fits, and foon kills), the moft effectual remedy, if immediately applied, is a vomit. For this purpofe give him a great deal of falt and water; to adminifter which, you may open his mouth, and put a ftick acrofs to prevent his fhutting it whilst you pour it down his throat, at the fame time holding his mouth upwards. If a fufficient quantity can be fwallowed, it will purge and vomit him; and, when his ftomach is fufficiently cleared, and a free paffage obtained by ftool, give him fome warm

broth frequently, to prevent his expiring from faintnefs.

4. *Worms*. Dogs are very frequently troubled with worms, but more particularly whilst they are young. Any thing bitter is fo naufeous to thefe worms, that they are very often voided by taking two or three purges of aloes, or (which is the fame thing) Scots pills, four or five being a dofe for a large dog; this is to be repeated two or three times in a week. If this do not fucceed, you may give him an ounce of powder of tin, mixed up with butter, in two dofes. Or of the herb favin, dried and rubbed to powder, give about as much as will lie on a fhilling for a dofe.

5. *Sore Feet*. A pointer ought not to be hunted oftener than two or three days in a week; and, unlefs you take care of his feet, and give him good lodging as well as proper food, he will not be able to do that through the feafon. Therefore, after a hard day's hunting, wafh his feet with warm water, and, when dry, bathe them with vinegar, which will take off the forenefs.

6. *Strains, Bruifes, or fmall Wounds*. If a dog, by forcing through hedges, becomes lame from a blow or ftrain, bathe the part with falt and vinegar. If there be a wound, apply ballicon.

7. *Coughs and Colds*. Dogs are very fubject to cough, with an extraordinary choaking, which is thought to arife generally from a cold, or fome diforder not underftood. If the complaint be a cold, let bleeding be ufed, and repeated in fmall quantities, if neceffary; but if it be what is called the *diftemper* in dogs, and he appear to be very low in fpirits and have a weak pulfe, the bleeding muft be omitted. Let meat-broth, or milk-broth warmed, be the principal part of his diet, ufig at the fame time the following medicine:

Take of Flowers of fulphur,

Cold drawn linfeed oil,

Salt-petre, of each an ounce.

Divide this into four dofes, giving him one dofe every other day, with one fpoonful of honey; and let him have plenty of clean ftaw to lie on.

#### MADNESS.

Of this there are no lefs than feven forts faid to be common among dogs. The caufes affigned are, high feeding, want of exercife, fulnefs of blood, and coftivenefs.

The two firft, which are diftinguifhed into

the *hot* or *burning madness*, and the *running madness*, no doubt, mean one and the same disease, to wit, the true *rabies canina*, or *hydrophobia*, a disease the very name of which is terrible, on account of its consequences to mankind. There is reason to consider this as a true contagious disease, as much so perhaps as the small-pox is to the human subject; and that, if, by universal consent, or by legal compulsion, all dogs were to be tied up on a certain day to be notified, and those apparently mad were to be destroyed throughout the kingdom, in all likelihood the disease would become extinct. It is said, however, by gentlemen who understand more of sporting than of medicine, that madness among dogs may be prevented by a strict attention to cleanliness, and the common means of preserving their health. We are told farther, to give them, once a-week, especially in the heat of the year, "five or six spoonfuls of salad oil, which will cleanse them; at other times, the quantity of a hazle-nut of mithridate is an excellent thing. It is also very good to bleed them under the tongue, and behind the ears."

The symptoms of true canine madness are these:—When any dog separates himself from the rest, contrary to his former use, becomes melancholy, or droops his head, forbears eating, and as he runs snatches at every thing; if he often looks upwards, and his stern at his setting-on be a little erect, and the rest hanging down; if his eyes be red, his breath strong, his voice hoarse, and he drivels and foams at the mouth; you may be assured he is mad, and should immediately *knock him on the head*, as the only cure.

In fact, the animal is become peculiarly dangerous; for all that he bites and draws blood from will have the same disease. A mad dog generally seizes on all he meets with, but chiefly on dogs.

The five madneffes said to be "*curable*" are the following. The general name of "*madness*" has doubtless been given to these complaints merely from the want of discrimination. Analogy would readily supply more appropriate names; but as these are only of a piece with the descriptions given of the symptoms and methods of cure, we shall not attempt any innovation.

1. *Sleeping Madness*, so called from the dog's great drowsiness, and almost continual sleeping. This is caused by the little worms that breed in the mouth of the stomach; for the cure of which take six ounces of the juice of wormwood, two ounces of the powder of hartshorn burnt, and two drachms of agaric; mix all

these together in a little white wine, and give it the dog in a drenching horn.

2. *Dumb Madness*. This causes the dog not to feed, but to hold his mouth always wide open, frequently putting his feet to his mouth, as if he had a bone in his throat. To cure this we are told to take the juice of black hellebore, the juice of *spatula putrida*, and of rue, of each four ounces; strain them well, and put thereto two drachms of unprepared scammony; and, being mixed well together, put it down the dog's throat with a drenching horn, keeping his head up for some time, lest he cast it out again; then bleed him in the mouth, by cutting two or three veins in his gums. It is probable this disease is merely the *quinisy*.

3. *Lank Madness*, is so called by reason of the dog's leanness and pining away. For the cure a purge is directed, and also bleeding. Some, however, suppose it a *consumption*.

4. *Rheumatic or Slaving Madness*, occasions the dog's head to swell, his eyes to look yellow, and he will be always flavering and driveling at the mouth. To cure which, take four ounces of the powder of the roots of polipody of the oak, six ounces of the juice of fennel-roots, with the like quantity of the roots of mistletoe, and four ounces of the juice of ivy; boil all these together in white wine, and give it to the dog, while hot, in a drenching horn. Perhaps *antimony* would suit better.

5. *Falling Madness (epilepsy)*, is so termed because it affects the dog's head, and makes him reel as he goes, and fall down. For the cure, give him a purge of aloes; also let him bleed in the ears, and in the two veins that come down his shoulders.

As to the preventive of worming dogs, see WORMING.

DOMESTIC ANIMALS, in zoology, animals that are fed at home, and become tame and subservient; in distinction from those which are wild, and in a state of nature.

DORSALES. The nerves which pass out from the vertebrae of the back are thus named.

DORSUM, the back. Most etymologists say, from *deorsum*, because it bends downwards. It is the hinder part of the thorax, though, as translated, *back*, it includes the loins also. Too long a back in a horse is a defect.

DORSUM SCAPULÆ. See the account of the "*muscles inserted into the humerus and cubit*," under ANATOMY of the horse.

DOSE, a given quantity, or portion, of any medicine, directed to be administered, singly or at certain intervals, to a sick animal. An important object in human medicine, and a



great *desideratum* in the veterinary science, is the ascertaining the effects of different medicines so far as to know the precise quantities that should be administered in different diseases, so as, on the one hand, to give nothing *fruitlessly*, nor, on the other, *dangerously*; but to *adapt the remedy to the case* under all existing circumstances. That peculiar difficulty does, and perhaps ever will, attend this, need not be insisted on. Indeed, nothing like a standard for prescription can ever be formed, or even approached, but by the attentive and unremitting observation of practitioners to the effects of the medicines they exhibit, and an occasional resort to *decisive experiment*, which the veterinarian at least may venture upon, though the physician cannot.

The practice of making these trials on incurable horses, that are given up by their owners to the PROFESSOR and MEDICAL COMMITTEE of the VETERINARY COLLEGE, is pregnant with information of the most valuable kind on this subject. It is from this source that, already, the inertness of some remedies, on which the old farriers implicitly relied, has been ascertained; and the degree of activity of others, administered under different circumstances of disease in the horse, has been justly estimated. We have endeavoured to keep sight of these in our account of the principal articles of the materia medica; in addition to which, the following *phological table*, though very limited in its extent, may not be useless to the veterinary practitioner.

The dose of medicines, given at one time to horses, is pretty nearly as follows, with regard to the annexed articles.

- Of Aloes, from one drachm to twelve.
- Calomel, as an alterative, from ten grains to forty.
- ———, as a vermifuge, combined with aloes, from one drachm to two and a half.
- Camphor, from two to ten drachms.
- Muriated quicksilver (*corrosive sublimate*), can seldom be given internally with safety; but, when given, it is in general from six to thirty grains.
- Vitriolated quicksilver (*turbith mineral*), from six to forty grains.
- Purified opium, from thirty grains to two drachms.
- Tartarised antimony (*emetic tartar*), from fifteen grains to half an ounce.
- Cinchona (*Peruvian bark*), from one to four ounces.

Of Nitre, from half an ounce to two ounces.

— Turpentine, from six drachms to two ounces.

— Vitriolated zinc (*white vitriol*), from two to six drachms.

— Castor oil, from eight to sixteen ounces.

It is scarcely necessary to observe, that the intermediate proportions must depend on the strength of the animal, the nature and violence of the disease, and the greater or less active effect the medicine is intended to produce.

**DOUBLE.** A horse is said to double the reins when he leaps several times together to throw the rider.

**DRACHM** (*drachma*), among the Greeks, was the name of a coin; also of a weight, which they divided into six oboli. In medicine it is the eighth part of an ounce, and contains three scruples, or sixty grains.

**DRASTIC** (from *δραστικός*, *active* or *brisk*), an epithet given to resinous medicines that operate speedily and powerfully. It is commonly applied to emetics as well as purgatives. Horses are often injured, and even their lives endangered, by too free a use of drastic remedies. Scammony, colocynth, jalap, and aloes, are drastics, and require to be mixed with aromatic substances before they can be safely exhibited in any considerable doses.

**DRAUGHT**, in the veterinary dispensatory. See the article **DRINK**.

**DRAUGHT HORSE**, in farming, a sort of coarse-made horse, destined for the service of the cart or plough. On the choice of these horses, for what is called the slow draught, we have inserted some judicious remarks of Mr. John Lawrence in the article **CART HORSE**.

Nothing is so essential to the health of these serviceable creatures as cleanliness; if they are fed ever so well, and not kept clean, they will be subject to numerous diseases.

The servant who has the care of them ought to be up very early, and to clean the racks and mangers from all filth. The currying of them ought to be carefully performed every morning; but not in the stable, for the dust to fall upon the other horses, as it is too often done. After the horses are dusted, they should daily twist a whip of straw hard up, and, wetting it in water, rub the legs, shoulders, and body, with it. Many of the diseases of draught-horses, which are not owing to nastiness, are owing to bad water; such as is too raw, too muddy, or too cold, being all improper. If there be any running stream in the neighbourhood, they should always be taken to that to water, every day in

summer; but in winter, well-water, being warmer, is better for them. If there be a necessity of giving them well-water in summer, it must be drawn up some hours before the time, and exposed to the sun-beams in tubs or troughs; marsh-water, or that of low-land ditches, is worst of all. When the labouring horse has drank his water, he should have his oats given him, and these should be carefully sifted, and the manger dusted first. It is a common practice, as soon as a horse is come in from his work, to rub down his legs with a whisp of hay; but some (we think without any good reason) have objected to it.

While a horse is in a sweat, it is a great relief and refreshment to him to have his body rubbed down. The racks are to be well supplied with hay, and the horses should be left to rest and eat about two hours, and then led to water: after this their oats should be given them, and they should then go to work again.

In the evening, when the labour of the day is over, the first thing to be done is to examine the feet, and see if any thing is amiss about the shoes; and what earth or gravel is lodged in the foot, between the shoe and the sole, is to be picked out, and some fresh cow-dung put in its place, which will cool and refresh the part.

A very material thing for the preservation of all sorts of cattle, but of none so much as draught-horses, is fresh and clean litter. This is a thing too often neglected in the care of these creatures; and many even neglect the cleaning away the old litter on purpose, leaving it there to imbibe more moisture, that it may be the better manure for the land. It is true, that by this the dung is enriched, and will go farther: but the benefit they reap from this is nothing in comparison of the mischief they do the horse in the mean time; for the heat this gives his feet is alone enough to hurt him. The owner often finds the effect of this, without knowing the cause; the horse, if his hoof be naturally soft and flat, becomes tender-footed and weakly, and is unable to do his business, though fed in the best manner that can be: the dung in this case is left under him, that there may be some advantage from his feeding; and the mischief is increased, instead of being relieved, till in the end the horse is generally rendered useless.

**DRAWING**, an epithet vulgarly applied to such cataplasms, plasters, and ointments, as either promote suppuration in a part when the

skin is unbroken, or promote a copious discharge from it when in the state of an ulcer.

**DRENCH**, among farriers, a physical draught or potion given a horse or cow. See the article **DRINK**.

**DRESSING**, the periodical application of friction, by means of brushes, cloths, &c. to the hides of animals, with a view both to cleanliness and health. To the horse, as the nobler animal, is allotted the greatest share of this salutary and gratifying process; the inferior descriptions of cattle being left to rub off their impurities as well as they can.

On this subject Mr. CLARK observes, that as exercise acts as an assistant to the heart in promoting the circulation of the fluids, so does friction on the surface of the body, by means of the curry-comb and brush, contribute to forward the circulating fluids, and promote that insensible perspiration through the pores of the skin which is so conducive to the health of the animal.

Currying and brushing horses that are kept in stables is done not merely with a view of taking away the dust and dirt that may be collected on the hair; but, when properly performed, it is a very beneficial operation to horses, as they naturally perspire much through the pores of the skin. This appears indeed from the effects which result from the omission of it. When this operation is neglected, or slightly performed, the perspirable matter hardens in the pores; it remains at the roots of the hair, and has the appearance of a whitish or brownish dust, and sometimes like small scales, which, for the most part, creates an itching: the skin, at the same time, generally appears dry and hard, the hair stares or stands on end, instead of lying smooth and shining.

Columella observes, that the bodies of cattle ought to be rubbed down daily, as well as the bodies of men; and oftentimes it does them more good to have their backs well rubbed down, than their bellies filled with large quantities of provender.

From what is known of the salutary effects of friction on the human body, it will be evident how much benefit may be derived to horses (if not to inferior cattle) from good rubbing and dressing as frequently as possible; but more especially when they are cold and chilly, after being over-heated, or from being suffered to stand in the cold air tied at the stable-door. Dressing becomes then the more necessary, as it produces a gentle heat and warmth all over the surface of the body, prevents stagnation of the



fluids in the vessels on the surface, and promotes a free perspiration.

However, though the greatest advantages may be derived to horses when in health by daily rubbing their bodies, yet Mr. Clark observes, there are cases of disease in which it may prove hurtful in certain parts; as in swellings of the legs, attended with inflammation, where rubbing with the hands is frequently recommended; or when there is a discharge of sharp ichorous matter from the pores, or in cracks in the heels, attended with great pain, or in wounds or punctures. As all these are attended with more or less inflammation, friction then proves hurtful on these parts; for the heat there being already considerable, friction will add to it, and, of course, do mischief: besides, as the vessels, in such cases, are too full and distended with blood, the force that is applied in rubbing the legs renders these vessels liable to be ruptured.

Washing horses with cold water, in order to clean them, by throwing whole pailfuls on their bodies when they are over-heated, immediately after posting, &c. which is now so commonly done on the post-roads, is a practice concerning which Mr. Clark speaks doubtfully; though it is said that no bad consequences follow from it. If they are well rubbed down immediately after such exercises, there is, he thinks, no need for washing them with cold water, and then rubbing them afterwards; as the latter operation is sufficient to clean them, without running any risk by washing them with cold water. He thinks it probable, that the only thing which prevents immediate bad consequences following from this manner of treatment is, that such horses are very soon afterwards put to active exercise on the road, by which they are put into strong perspiration again; for not only our experience (the above instance only excepted), but the experience of past ages, have demonstrated the bad consequences that commonly follow the too sudden application of cold, whether it be water or air, to an animal body when over-heated. Hence, it should seem most prudent to avoid the washing of horses, when they are over-heated, with cold water, more especially in cold chilly weather, as it answers no good purpose, and certainly is not without danger. For the same reason, washing the dirt off horses' legs, belly, and thighs, with cold water, immediately after they have performed a stage and have been over-heated, should likewise be avoided till they are cool. If well rubbed afterwards, and thorough-

ly dried, it will be very proper; but this is very seldom put in practice.

**DRINK**, a liquid form of medicine occasionally administered to horses and other cattle.

In drenching horses, it is usual to draw up their heads pretty high with a cord fastened round the upper jaw, holding up the horse's head in that posture till the drink has passed down into his stomach.

Mr. Clark, of Edinburgh, observes, that great care should be taken to compound the medicine properly, and not to mix drugs of opposite qualities, which do not unite or mix intimately together. Common farriers, totally ignorant of chemistry and pharmacy, do not attend to this circumstance. Hence, the drenches which are frequently given to horses are so very nauseous and disagreeable, that they will not swallow them, and they are consequently rejected and spilt in the administering; or, when swallowed, as they sometimes are, with reluctance, they occasion such a nausea or sickness, that they too frequently increase rather than alleviate the complaints they are intended to remove. Thus, when balsams are to be administered, if they are not properly blended with some mucilaginous substance, they will swim entire on the surface of the liquid in which they are intended to be given; and, if poured into the mouth in their original form, their pungency irritates the membranes of the mouth and throat, and occasions violent coughing. Much also is spilt in the struggle, and the horse will prove shy afterwards to take any thing that is forced upon him in the form of a drench. Rough substances, hot spices, ardent spirits, wines, powders, &c. produce this effect when they are not properly compounded; and Mr. Clark says he has frequently known pieces of solid gums, as large as a walnut, forced upon horses in a drench, in consequence of the prescriber's not knowing how to dissolve, or neglecting to reduce them to a powder. Venice or common turpentine, he observes, is frequently prescribed to horses with success, when *properly prepared*; yet, when these are administered without any other preparation than that of being reduced into a fluid state by the heat of the liquid in which they are given, they prove disagreeable, by sticking about the mouth and throat, and occasion violent coughing. The same observation holds with respect to other remedies; and thus, by the injudicious compounding of drugs, the most powerful of them may be rendered of no effect; the poor animals fall a sacrifice to ignorance, and are deprived of

that relief under their various diseases which it is in the power of medicine to afford, if properly administered.

"The proper time of administering drenches," says Mr. Clark, "is likewise of great importance; and, indeed, on this circumstance, in a great measure, depends their whole success in practice; for, however well adapted the compositions may be at a certain particular period of a disease, to remove or to mitigate it, yet, in certain cases, the very administering of medicines in the form of a drench proves hurtful, particularly when the throat, jaws, &c. are sore, swelled, and inflamed: the forcing a drench on a horse in this critical period is followed with the most violent symptoms; and it has frequently happened, that a simple solution of nitre in water, sweetened with honey or molasses, given in the above cases, has occasioned the most violent coughing, trembling, panting, &c. inasmuch that the poor animals were like to drop down, merely from the acute pain they suffered from administering any thing by way of a drench in this critical period. The very position a horse's head is put in to receive a drench, in these cases, creates to him the most exquisite pain, from the distension the muscles of the throat, &c. undergo, when the head is held up by force, at a time when the animal can hardly bear these muscles to be touched by the fingers even in the gentlest manner.

"From what has been now observed, it will be evident how highly imprudent it is even to attempt the giving food or medicines by way of a drench in these cases, till such time as the swelling, inflammation, &c. are abated; and even then no medicines should be given but such as are of the emollient kind, and, at the same time, well blended with mucilaginous substances, as the infusion of linseed, solution of gum-arabic, or the yolks of eggs; as these substances sheath or blunt the pungency or sharpness of the drugs that are administered.

"As all herbs, feeds, &c. yield their virtues readily to water, they should be infused in that which is boiling, and the thin parts drained off for use; balsams should be incorporated with mucilages, gums should be powdered or dissolved, and all drenches should be made as agreeable as possible, and sweetened with molasses or honey."

Medicines are frequently administered in the form of a drench to horned cattle. In these the wholesome cautions suggested by Mr. Clark ought to be equally attended to.

DRINKING. See WATERING.

DROPPING, a name given by common far-

riers to that disease in the cow which is analogous to the puerperal fever in women. Downing gives, and Mr. John Lawrence repeats, the account of the treatment of this complaint in the following way:

Take of Nitre, in powder, two ounces;  
Sulphuric acid (*oil of vitriol*), one drachm;

Rub them together in a (*glass*) mortar.

Then add

Valerian, in powder, one ounce and a half;

Snake-root, one ounce;

Treacle, half a pound.

This is ordered to be given in a decoction of feverfew, balm, and chamomile, and repeated every twelve hours. The animal should be well attended, clothed warm, back-raked if needful, and placed with her fore-parts somewhat elevated. How agreeable would it be to every rational veterinarian to know the *principles* on which this practice is founded!

DROPSY. Many English authors, and some Italians, have enumerated the dropsy among the diseases of horses, and some affirm positively that they have cured it in all its different kinds: but though there is no reason to suppose brutes incapable of this disease, yet certain it is, that that which chiefly happens to horses is the *anasarca*, or universal dropsy, which shews itself more or less in all the external parts of the body, but especially in the legs and thighs, sheath, &c. as these are the most dependent parts.

The cause arises from all kinds of ill usage, but especially from bleeding and purging horses beyond their strength; for these unseasonable evacuations render the animal languid, and weaken the blood-vessels, so as to make the serum burst through the small vessels, and lodge under the skin or fleshy pannicle.

The signs of the disease are a lassitude and weariness, faintness and difficulty of breathing, loss of appetite, and a change of the horse's colour from bay to dun, or from black to a dusky colour, and from white to an ashy complexion, &c. His hair will shed with the least rubbing, and the pits of the fingers will remain wherever there is a swelling.

Although purging to excess is sometimes the cause of this complaint, by destroying the tone of the vessels; yet, in order to procure the discharge of what is superfluous, purging must again be made use of; and when that is performed with proper medicines, it is of no small moment in the cure: but the purges employed



must be such as, beside their evacuating quality, are able to communicate warmth and vigour to the system, &c.—for which purpose Gibson directs the following:

Take of Jalap, one ounce and a half;  
Gamboge, two drachms;  
Seeds of dwarf-elder, two ounces;  
Ginger,  
Nutmeg, of each half an ounce.

Make all these into a fine powder, and form them into two balls, with as much turpentine as is sufficient for that purpose.

Let these be repeated every other day for a fortnight or longer; and, on those days he does not purge, an ounce or six drachms of antimony may be given him.

Sweating is also of the greatest service in this disorder, when it can be promoted. Accordingly, Gibson directs the following dose to be given as there is occasion:

Take of Venice treacle, four ounces;  
Mathew's pill, two drachms;  
Camphor,  
Salt of hartshorn, of each fifteen grains.

Mix them well together, and give in a quart of warm ale.

Particular regard is to be had to a horse's diet in this case; for, while he undergoes these evacuations, his aliment should be proportioned to it: and therefore he may be allowed a large measure of clean oats every day after the operation of his physic, with an ounce of the seeds of dwarf-elder, and two ounces of carraway-seeds strewed among them.

Tonic remedies are of still more importance after due evacuation. Indeed, as an hydropic affection of the abdomen and other cavities, in the larger brute animals, is a rare occurrence, the plan of treatment to be attended to under this article should certainly be that of ANASARCA, which will be farther described under GREASE.

DRUGS, a popular appellation denoting the various medicinal substances employed in the cure of diseases. Chemicals as well as Galenicals go under the general name of Drugs. One of the crying sins of the age is, the adulteration of these, or the substitution of one substance for another. These frauds commence even in the country which produces the article; and it becomes more or less debased according to the number of hands through

which it is conveyed to the unfortunate patient, whose life perhaps is the price of this detestable and most wicked practice. Mr. John Lawrence calls the attention of those who practise veterinary medicine to the probable danger of the most judicious prescriptions, where the ingredients are defective, or not to be depended upon. The advantages of ready-made medicines (*i. e.* of drugs compounded pharmaceutically into BALLS, DRINKS, &c.), he says, are obvious enough; but it were to be wished there were less to counterbalance these: for, it must be acknowledged, the temptation of putting off *bad drugs* in these compositions is great, the hazard of their being *stale* considerable, and the uncertainty not a little in point of accuracy, where it may be reasonably supposed very large masses are compounded at one time. Instances, he says, are not wanting, where the *distribution* of the *cathartic bases* has been so irregular, that one ball has acted as a mere alterant, while another has nearly purged a horse to death. Nor; in these ready-made medicines, need we expect, where two kinds of the same article are to be had, any but that which is inferior; as in the instance of aloes, of which the *Barbadoes* is the cheapest and least favourable in its effects; and rhubarb, of which the *Turkey* is the best and the dearest.

From a little book, published under the auspices of that duke of Devonshire who was the proprietor of flying Childers, Mr. Lawrence transcribes the following general advice with regard to the purchasing of drugs for veterinary uses; first premising that the author complained much of the badness of the drugs purchased by the country apothecaries in his days, which he asserts were the worthless refuse of the London shops; and that he once had a horse killed by a farrier's drench.

1. *Chemical preparations* should be had from the most eminent chemists in London, which, if kept well stopped in flint glasses, will be preserved good for many years.

2. *Woods and Guns.* Woods should ever be purchased in the piece: in chips they will not last good above a year; in powder only a few months. Preserve these in boxes of tin or oak, in a dry place.

3. *Seeds* ought to be fresh every year.

4. *Roots and Herbs*, if native, it is highly convenient to cultivate at home. Herbs must be dried annually, roots preserved as directed for woods and gums.

A desideratum in veterinary medicine is the ascertaining, by direct *experiment*, the effects of the different articles of the *materia medica* upon

brutes (see ANALOGY). For want of this we are led to employ, often at a great expence, medicines incapable of acting at all, or perhaps in a very different degree, on those animals. Gibson, in his Farrier's Dispensatory, has included almost all the remedies prescribed in human diseases; but the experiments of modern veterinarians will probably reduce this list very considerably. When drugs must be had, it is prudent to purchase them at the most reputable shops, and rather to compound the articles ourselves than trust to BALLS, &c. sold in a prepared state.

**DUCT** (*ductus*, from *duco*, to lead), a membranous tube or canal. This word is frequently applied to parts of the body through which particular fluids are conveyed. Thus we have the *biliary duct*, the *thoracic duct*, the *lacrimal duct*, the *pancreatic duct*; which are nothing more than simple canals designed to convey the several secretions to the places intended by nature for their reception.

**DUKE'S OINTMENT**, in the old farrier's dispensatory, a preparation recommended to be rubbed on the withers, hams, or other parts of a horse, when they happen to be inflamed, or swelled by blows or bruises. It consists of equal parts of balsam of sulphur and tallow; and is said to take down the swelling, and abate the heat and inflammation, without bringing the part to suppuration. It is also reckoned very good to anoint any part that is mangy.

**DULL**, in the manege. The supposed marks of a dull stupid horse are white spots round the eye, and on the tip of the nose, upon any other general colour: though Guillet says, these are the marks of goodness in a horse, and that such horses as have them are very sensible and quick upon the spur. See COLOUR.

**DUN-COLOUR OF A HORSE**. See the article COLOUR.

**DUNG OF A HORSE**. This should be observed upon a journey. Solleysell says, if it be too thin, it is a sign that either his water was given him too cold, or that he drank too greedily of it. If there be among his ordure whole grains of oats, either he has not chewed them well, or his stomach is weak; and if his dung be black, dry, or come away in very small and hard pieces, it denotes that he is over-heated in his body. Viscous or slimy dung, voided by a race-horse, shews that he is not duly prepared; in which case garlic balls are to be administered to him, and he is to be duly exercised till his dung is voided without much moisture. The indications of health or disease from the state

of the evacuations should be attended to in all animals.

**DUODENUM** (from *duodeni*, twelve). This intestine is thus named from a supposition that, in the human subject, its length does not exceed the breadth of twelve fingers; and, if measured with the ends of the fingers, that is about the matter. It is continued from the pylorus, from which, turning downwards, it runs under the stomach immediately above the vertebræ, towards the left side, and ends at the first of the windings under the colon. At its lower end there are two ducts, which open into its cavity.

**DURA MATER**: See BRAIN.

**DYSPEPSIA** (from *δυσ*, difficult, and *πέψις*, to concoct), difficulty of digestion, or rather a depraved one; as when what is digested becomes acid, or possessed of other morbid qualities.

**DYSENTERY**, a violent purging, accompanied with blood in the stools. All fluxes of the belly, in horses and other cattle, are generally included under the names of LAX and SCOURING, or DYSENTERY. When a horse falls a purging, and continues but a short space in it, or when he is more than ordinarily open, and dungs like a cow, it is called a LAX; and when the purging continues, though it amounts to what we call a *diarrhœa* in men, he is only said to scour. As to a dysentery, when blood and slime come away with the excrements, it is a symptom that seldom happens, except when a horse has been wounded in the intestines, or has received some uncommon treatment, such as violent and repeated drastic purges; but it is seldom, if ever, the mere effect of a diarrhœa. That horses are not subject to dysentery, Gibson supposes, may be owing, in a great measure, to their horizontal position, whereby the rectum is less apt to be affected in severe purgations than it is in men. Besides, he observes, the violent gripings, that are almost always the concomitants of a diarrhœa, soon destroy a horse, if they are not removed: so that the disease seldom has time to arrive at the state of a dysentery or bloody flux. The remedies directed under DIARRHœA, with some variations which will occur to the practitioner, may be rendered applicable to cases of dysentery.

**DYSURIA** (from *δυσ*, painful, *ουρ*, urine, and *ρεω*, to flow), a difficulty of voiding the urine. When the urine passes by drops, it is called a STRANGURY; and a total suppression of urine is called ISCHURIA.



# E.

## E A R

**E**AR, in comparative anatomy, is divided into the external and internal: the external is that part which a horse moves backward and forward at pleasure, and is so well known, that a description of it would be superfluous. Its design is partly for ornament, and partly to gather all sounds, and transmit them to the internal ear.

The internal ear consists of several parts, which are very curious, and are seated in the cavity of the *os petrosum*. The first of these is the *tympanum*, or drum, with its cord and muscles. This is a very thin and transparent membrane, being an expansion of the softer process of the *auditory nerve*. It is very dry, that it may the better contribute to hearing; and strong, that it may the better endure loud sounds, or any other external injuries. Within this membrane there is a cavity, called the *concha*, wherein are four little bones, which are bound together by a small ligament proceeding from the cord of the drum. The first is called the hammer, which lies upon the second, called the anvil. The third is named the *stapes*, or stirrup; but in a horse it is triangular, like the Greek letter  $\Delta$ . Upon the upper part of the stirrup the longest foot of the anvil stands. The fourth is called the *orbicular bone*. It is of a round shape, and tied with a slender ligament to the side of the stirrup, where it is fastened to the anvil. These bones are a defence to the drum, and preserve it from being torn, or beaten inwards, by the violent vibrations of the outward air in loud sounds, and are thus assisting to the sense of hearing. When the external air beats upon the drum, it is driven against the hammer, which strikes upon the anvil, as the anvil beats against the stirrup; and as this force is more or less exerted, so the stirrup opens the oval window more or less, and proportionably the sound appears louder or lower.

The *cavities* within the *os petrosum* are in number three. The first, wherein these four

## E A R

little bones are situated, is called the *concha*, from its resembling the shell of a tabor. When the membrane is struck upon by any outward sound, the echo is made in this cavity as in a common drum. There are in this cavity various instruments: whereof some are for pulsation, as the four little bones above mentioned; some are for conducting the air into the other cavities, such are the two small perforations called the windows; and a third sort are those by which the pituitous matter collected within this cavity is discharged towards the palate and nose. The first of these two perforations, being the uppermost and largest, is, from its figure, named the *oval* window, which is kept shut next the *concha* by the basis of the stirrup as often as the sound ceases. The other, which is round, is always open, having no covering, and divided by the *os squamosum* into two pipes; one of which tends to the *cochlea*, the other into the labyrinth. The *labyrinth*, which is the second cavity, by its several turnings and windings, which are somewhat circular, modulates the sounds in such a manner as that they may be leisurely communicated to the auditory nerve, which is dispersed through the membrane that invests this cavity. There is, besides the two windows which open into this cavity, one perforation which opens out of it into the inner cavity called the *cochlea*, into which the air passes after it has been agitated in this cavity and the *concha*. Besides these, there are four other small holes for the ingress of the nervous fibres, that are inserted on the membrane which clothes it.

The *cochlea*, which is the third and innermost cavity, is so called from the resemblance it has to a small snail-shell, especially in its spiral windings. It is far less than either of the former; but invested as the others are with a thin membrane, into which also the slender fibres of the auditory nerve do enter. This cavity is filled with the internal inbred

air as well as the former, by which the echo is made to the impulse of the internal air upon the tympanum; and the auditory nerve being expanded upon the membrane which lines all those cavities, it is suddenly affected therewith, whereby it is communicated to the original of the nerves, where all sounds are distinguished. The clipping away the hair from the inside, in some horses, where the passage into the ear is large, may prove hurtful, by exposing them to colds when they happen to be out in high winds or rainy weather, and may tend greatly to affect the hearing.

How far a horse may exceed or fall short of other brute animals in point of hearing, no one can exactly determine: however, it is observed, that some horses will distinguish their keeper, not only by his voice, but by the tread of his foot, before he enters the stable; and some will distinguish the sound of another horse's foot at a very great distance, and before it can be heard by us. When a horse is in a fever, and parched with heat and drought, though at that time we may suppose his senses to be very dull and much confused, yet he will prick up his ears at the least noise of a pail. Horses are very acute in distinguishing sounds, appearing greatly delighted with some, and displeased with others. The grunting of a hog, or the braying of an ass, will put some horses upon the fret, or any harsh sound made by an unusual instrument. On the other hand, all fine horses love the cry of hounds; are elevated with the horn, and with various kinds of music; and some are quite transported with the sound of drums and trumpets, and other martial instruments: which shews that a horse has a well-formed ear, and a very great delicacy in hearing. If these be the gratifications of which this noble animal is susceptible from the function we are describing, how cruel is it, as well as injurious, to impair, interrupt, or endanger it, by the practice of cropping (see CROPPING), from which no one advantage is derived, except in point of appearance?

The ears of a horse (*i. e.* the external) should be small, narrow, straight, and hardy, and the whole consistence of them thin and delicate: they should be placed on the very top of the head, and their points, when styled or pricked up, should be nearer than their roots. When a horse carries his ears pointed forwards, he is said to have a bold, hardy, or brisk ear; also, when a horse is travelling, he should keep them firm, and not, like a hog, working every step by the motion of his ear.

**EAR-ACH**, a violent pain in the ear, of the nature of rheumatism. The existence of this in brute animals is difficult, if not impossible, to ascertain. When there is reason to suppose it exists, some harmless remedies should be tried; such as syringing the ear with moderately warm water, covering it with warm flannels, stimulating the skin around the root of the ear with spirits of turpentine, or dropping a little camphorated oil into the ear itself. Horses sometimes suffer from the accidental admission of straws, dust, insects, &c. into the ears, especially those that have been cropped, or had the hairs removed or trimmed from within the outer cavity. In these cases syringing may be resorted to; or, if any living insect be concealed there, and cannot be got out by this means, it may be certainly killed by pouring a little warm oil into the ear, and will then be easily brought away.

**EBRILLADE**, in the manege, a check of the bridle which the horseman gives to the horse, by a jerk of one rein, when he refuses to turn. An ebrillade differs from a faccade; the latter being made with both reins at once, and the former with only one. Most people confound these two words under the general name of a check, or jerk of the bridle, called in French *coup de bride*. It is a chastisement, and no aid, and is disused in the schools.

**ECAVESSADE**, in the manege, is used for a jerk of the cavesson.

**ECCHYMOSIS** (from *εκχυνω*, to pour out, and *αἷμα*, blood), a disorder of the superficial parts of the body, which happens when, by a contusion, the capillary vessels are broken, and their contained fluids extravasated. These stagnating, change the natural colour of the part to brown, livid, or black. In the operation of blood-letting, a small tumor is raised immediately above the orifice in the vein, by the blood insinuating itself into the cellular substance of the neighbouring parts: such a tumor, when round and small, is termed a *thrombus*, and, when more diffused, an *ecchymosis*.

**ECCOPROTICS** (from *εκροτος*, dung), mild cathartics, whose operation extends no farther than to evacuate the intestines.

**ECHAPE**, in the manege, denotes a horse got between a stallion and a mare of a different breed and country.

**ECHAPER**, is used in the French horse-academics for giving the horse his head, or putting on full speed.

**ECLIPSE**, a race-horse, whose wonderful performances on the turf have been the theme



of admiration amongst the sportsmen of his time, and an object of curiosity to veterinary men, since his shape and make were by no means such as indicated the extraordinary qualities he possessed. Mr. ST. BEL, who took uncommon pains to investigate all that was curious respecting this noble animal, gives the following account of him. With respect to his *sporting* history, he was, at the time of his death, the property of Denis O'Kelly, esq. He was originally bred by the late duke of Cumberland; bought, for forty-six guineas, at the sale of his royal highness's stud, by Mr. Wildman, who afterwards sold him to his late possessor for seventeen hundred guineas. In 1769 he won fifty guineas; fifty at Epfom; fifty at Ascot-heath; the king's hundred guineas, and fifty, at Winton; the hundred guineas, the bowl, and thirty guineas, at Salisbury; and the king's hundred guineas at Canterbury, Lewes, and Lichfield. In 1779 he received forfeit six hundred guineas at Newmarket, and won the king's hundred guineas; the king's hundred guineas at Guildford; the same at Nottingham; the same, and three hundred and nineteen pounds ten shillings, at York; the king's hundred guineas at Lincoln; one hundred and fifty guineas and upwards, and the king's hundred guineas again, at Newmarket. He was never beaten by any horse.

Eclipse was got by Mask, a son of Squirt, which was got by Bartlet's Childers; his dam by Regulus, his grand-dam by a full brother to Mr. Wildman's Squirrel, his great-grand-dam by lord Darcey's Montague, his great-great-grand-dam by Hautboy, his great-great-great-grand-dam by Brimmer, son of the Oglethorp Arabian.

The occasion of the death of Eclipse is thus described by Mr. ST. BEL.

"In the morning of the 25th of February, 1789, Eclipse was seized with a violent colic. The remedies acknowledged as most proper in that case were administered, but without effect. He expired on the 27th, at seven o'clock in the evening, in the twenty-sixth year of his age."

On opening of the body, the following appearances were noted.

"The opening of the abdomen, or lower belly, presented immediately an overflowing of sanguinous serum; all the intestines were in a state of extreme inflammation, and even covered over with gangrenous spots. The mesentery and the epiploon were in the same condition; the glands appeared much swelled, and the blood-vessels were filled with a black thick

blood, apparently without any serum. The stomach was entirely empty; its inward membrane little inflamed; the spleen was much obstructed, as was also the liver, one lobe of which was partly in a state of putrefaction. The dissection of the reins, or kidneys, more particularly discovered the cause of the disease: the pelvis was filled with purulent matter, and the membranes completely destroyed by the effect of suppuration. The bladder did not contain a drop of urine, but only a certain quantity of pus, conveyed by the urters; its villous coat was corroded by the matter. From the above circumstances I infer," says the professor, "that the reins performed their functions in a very imperfect manner, and that the animal died in consequence of the affections of these viscera, and of a violent inflammation in the bowels. The viscera of the chest partook, in a very slight degree, of this inflammation. It is worthy of notice, that the heart weighed fourteen pounds. The skull was not opened, as it was my intention to preserve entire the skeleton of so famous a horse."

To this account Mr. ST. BEL adds some comparative remarks between the proportions of Eclipse, and the table of the geometrical proportions laid down for the use of the pupils of the veterinary schools of France.

"The horses of different countries," he observes, "are in general distinguished from each other by a peculiar appropriate conformation. The Spanish horse differs materially in his outward appearance from the English race-horse. The difference in the length and direction of the parts of which each is composed, produces in each a system, from whose mechanical arrangement result motions very unequal in their extent. The Spanish horse cadences his steps with dignity, while the English horse drives his mass forward with strength and speed. This difference, which proceeds from the peculiar conformation of each, contradicts in some particulars the table of geometrical proportions in the use of the pupils of the veterinary schools of France. It proves, that no common measure can be made to apply equally to every species, since nature has even diversified the forms of the individuals which compose it.

"If each species has its own style of beauty; if even each individual has its own peculiar beauty; if it is not possible to find two horses that perfectly resemble each other; we cannot pretend to assign any one form preferably to another as the *rule of beauty* for the horse."

The author farther observes, that a horse may appear ugly to a vulgar eye, and be still well proportioned. Eclipse was never esteemed handsome; yet he was swift, and the mechanism of his frame almost perfect. Whoever compares his proportions with those in the French table will discover the following differences.

1st, In that table the horse should measure three heads in height, counting from the fore-top to the ground: Eclipse measured upwards of three heads and a half.

2dly, The neck should measure but one head in length: that of Eclipse measured a head and a half.

3dly, The height of the body should be equal to its length: the height of Eclipse exceeded his length by about one tenth.

4thly, A perpendicular line falling from the stifle should touch the toe: this line in Eclipse touched the ground at the distance of half a head before the toe.

5thly. The distance from the elbow to the bend of the knee should be the same as from the bend of the knee to the ground: these two distances were unequal in Eclipse, the former being two parts of a head longer than the latter.

"This summary comparison," says Mr. ST. BEL, "shews, that the beauty of the horse cannot be absolutely determined by general rules, but must ever be in relation to the particular species.

"Although M. Bourgelat has not given to his system all the extent which it was capable of receiving, we must nevertheless acknowledge, that the consequences which he deduces from it may, under certain modifications, serve to explain the mechanism of the different species of horses.

"It is certain, that the different degrees of speed, which we observe in the paces of horses of different breeds, result principally from the mechanic combination of the pieces which compose the organs of progression; and it is only in examining their proportions when just, in ascertaining their exactness, their perpendicular, their absolute and relative directions, that we can conceive any hopes of apprehending the intentions and purposes of nature." See the article PROPORTION.

ECOUTE, in the manege, a pace or motion of a horse, when he rides well upon the hand and the heels, is compactly put upon his haunches, and bears or listens to the heels or spurs; and continues duly balanced between

the heels, without throwing to either side. This happens when a horse has a fine sense of the aids of the hand and heel.

ECPHRAC'TICS (from *εκφραττω*), such medicines as are supposed to thin tough humours, so as to promote their discharge.

ECTROPIUM (from *εκτροπω*, to invert), an inversion or eversion of the eye-lids. The eye-lids are so retracted, that their inner red skin is rendered prominent, and the eye cannot be sufficiently covered by them. When this accident happens to the upper eye-lid, it then, resembling the hare's eye, is called *lagophthalmus*, or hare's eye. The word *ectropium* is often applied to the under eye-lid only.

ECURIE, in the manege, a *stable*, or covert place for the lodging or housing of horses.

ECUYER, in the French manege, the riding-master. Formerly it also denoted certain officers in the king of France's household, who helped the king in mounting his horse and alighting, and followed him on horseback. These were called *ecuyers de quartier*. Gentlemen-ushers to the queen of France, and the masters of the horse to the princes and persons of quality, were also called *ecuyers*. Besides these there were others called *ecuyers cavalcadours*.

EDULCORATION, signifies the separation of substances combined with others of a different nature. The process may be exemplified in the separation of certain salts from the substances that contain them, by exposing the particles of the latter to the action of water, which dissolves and carries off the salt, leaving what remains *edulcorated*. This term also means the sweetening of any thing with sugar or syrup.

EFFECTS OF THE HAND, in the manege, are taken for the AID'S; that is, for the motions of the hand which direct the horse. They distinguish four effects of the hand, or four ways of making use of the bridle, viz. that of putting the horse forwards, drawing him backwards, and shifting it out of the right hand into the left, or *vice versa*.

EFFERVESCENCE, a term which expresses a greater degree of motion or struggling of the small parts of a liquor than is commonly understood by fermentation or ebullition; and such as occasions great heat: or rather, it is the extrication of air from the fluids that contain it as a constituent part.

EFFLORESCENCE, expresses the breaking out of some eruptions on the skin, accompanied with a degree of redness, as the measles in the human subject.



**EFFLUVIA** (from *effluo*, to flow out), those small particles which are continually flying off from bodies; the subtilty and fineness of which appear from their being able, a long time together, to produce very sensible effects without any sensible diminution of the body from whence they arise; and the considerable effects they may have upon other bodies within the sphere of their activity, may be learned from the propagation of contagious diseases.

**EGUILLETTE**, in the manege. See **YERK**.

**EJECTION**, signifying to throw out, is the discharge of any thing by vomit, stool, or any other emunctory.

**ELABORATION**, strictly signifies the working any thing with the hands; but is generally applied in the same manner as digestion, or concoction of the animal fluids.

**ELATERIUM** (*ελατηριον*), a genus in Linnaeus's botany. There are two species. It is the name also of a species of *momordica*. The prepared juice of the wild cucumber is a strong hydragogue cathartic, and exhibited as a remedy for the dropsy in the human subject. Its operation on brute animals remains to be ascertained.

**ELBOW**, or **CUBIT**, OF A HORSE, is the hind part of the arm which points towards the sternum.

**ELDER**, *Sambucus niger* Lin. Common black-berried elder. Of this the inner bark, flowers, leaves, and berries, are employed in human diseases, and it also frequently appears in veterinary prescriptions.

The elder is a large shrub, frequent in hedges. It flowers in May, and ripens in September.

The *inner green bark* of its trunk has scarcely any smell, and very little taste; on first chewing, it impresses a degree of sweetishness, which is succeeded by a slight acrimony, which continues for some time, and which it imparts both to watery and spirituous menstrua. In the human subject it is strongly cathartic, and is recommended as an effectual hydragogue.

The *young buds*, or rudiments of the *leaves*, are strongly purgative, and act with much violence.

The *flowers* are very different in quality: these have an agreeable aromatic flavour, which they give over in distillation with water, and impart by infusion to vinous and spirituous liquors. Infusions made from the fresh flowers are gently laxative and aperient; when dry, they are supposed to be diaphoretic, and particularly useful in erysipelatous and cuticular disorders. Externally they are used in so-

nientations, in clysters, and for making an ointment.

*Ointment of Elder.*

Take of Elder flowers, full blown, four pounds;  
Mutton suet, prepared, three pounds;  
Olive oil, one pint.

Melt the suet with the oil, and in this mixture boil the flowers till they be almost crisp; then strain and press out the ointment.

This ointment does not seem superior to some others, which are much neater, and prepared at less expence. It can scarcely be supposed to receive any considerable virtue from the ingredients from which it takes its name; yet it is in considerable request with some veterinary practitioners of the old school.

The *berries* have a sweetish, not unpleasant, taste. They are said to be poisonous to poultry, and the flowers no less so to peacocks. If turnips, cabbages, fruit-trees, or corn, which are subject to blight from a variety of insects, are whipped with the green leaves and branches of elder, it is said, the insects will not attack them.

**ELECAMPANE**. See **ENULA**.

**ELECTION**, that part of pharmacy which consists in a knowledge of the various simples which compose the materia medica, and directs the choice of drugs, distinguishing the good from the bad.

**ELECTUARY**, or **ELECTARY**, a form of medicine made of conserves, powders, &c. into the consistence of honey, or the pulp of a roasted apple, to be divided into doses, when taken, like a bolus. This form is attended with considerable inconveniences; for electuaries, generally made up with honey or syrup, when the consistence is too thin, are apt to ferment, and, when too thick, to candy. By both these, though it is exceedingly difficult to avoid the one or the other of them, the ingredients will either be entirely altered in their nature, or impaired in their virtues.

**ELEMI**, a resinous gum so called, is the produce of the *Amyris Elemifera*, Lin. The college have retained this substance in their pharmacopœia; it enters the Unguentum Elemi.

**ELEVATOR**, signifies a raiser, or lifter up, and therefore is applied to the chirurgical instruments put to such uses. That employed to restore to its natural situation a depressed piece of bone in a fractured skull, is an instance. It is also applied to several muscles in animal bodies. See **EXTERIOR**, and **LEVATOR**.

**ELEVATOR AURICULÆ.** This muscle arises from the external termination of the frontal muscle, it being formed of fleshy fibres covering the temporal muscle; and being thin and membranous, is carried over it; then growing narrower, is inserted into the upper part of the ear, bringing it forward.

**ELEVATOR ALARUM NASI.** This muscle arises from the top of the bone of the nose near the lachrymal cavity, with a sharp and fleshy beginning, and falling down towards its sides in a triangular figure, not much unlike the Greek letter Δ, it extends downwards the length of the bone, and is inserted broad and fleshy into the alæ nasi.

**ELEVATOR OCULI.** It arises from the bottom of the socket, near the hole which gives a passage to the optic nerve; then passing over the upper part of the globe of the eye, is inserted into the superior and anterior part of the sclerotica.

**ELIXIR**, a term derived from the Arabic, in which language *al-ecfir*, or *alekfir*, signifies *chemistry*; hence *elixir*, a medicine prepared by the chemical art, is appropriated, by way of eminence, to a tincture extracted by a proper menstruum from many efficacious ingredients: a tincture is drawn from one ingredient, an elixir from two or more at the same time. An elixir, however, is no other than a compound tincture.

**ELUTRIATION**, washing over, is the pouring a liquor out of one vessel into another, in order to separate the subsiding matter from the clear and fluid part.

**EMBRACE THE VOLT**, in the manege, is used when a horse, in working upon volts, makes a good way every time with his forelegs. The opposite term to embracing a volt is **BEATING** the dust, which is putting his forefeet near the place from whence he lifted them up. *Embracing the ground* is used in the same sense as embracing the volt. A horse cannot take in too much ground, provided his croup does not throw out, that is, does not go out of the volt.

**EMBROCATION** (from *ἐμβρεχω*, to *moisten* or *soak in*), an application in a fluid form, usually prepared of volatile and spirituous ingredients, and mostly used to relieve pains, numbness, &c.

The following formulæ for embrocations are taken, with some abridgments, from Mr. John Lawrence. They are liable, however, to an objection, not sufficiently adverted to even by modern prescribers of veterinary medicine, that, in some instances, their ingredients are inca-

pable of chemical combination; in consequence of which, it cannot but happen that the practitioner's view of *co-operation* in the different parts is defeated, and the whole effect produced, perhaps, by one single article included in the heterogeneous compound. The first of these the author calls the

*Saturnine Strengthening Embrocation.*

1. Take of Distilled vinegar, one pint;  
Water, one pint;  
Extract of lead, three tea-spoonfuls;  
Oil of turpentine, two ounces.  
Mix.

He advises a quantity of this to be kept, close corked, for stable-use, as it improves by keeping. With submission to this very intelligent writer, we suspect the oil of turpentine in this embrocation to be the predominant, if not the *exclusive*, remedy.

The various forms of embrocation which follow, Mr. Lawrence recommends as proper for *strains*.

2. Take of the best vinegar, one pint;  
Camphorated spirits, four ounces;  
White vitriol, dissolved in a little water, two drachms. Mix.
3. Take of Vinegar, half a pint;  
Camphorated spirits,  
Spirit of vitriol, of each two ounces.  
Mix.
4. Take of Distilled vinegar, eight ounces;  
Castile soap, one ounce;  
Sal ammoniac, half an ounce.
5. Take of Sugar of lead,  
Alum,  
White vitriol, of each one drachm;  
Japan earth, four ounces.

Powder and dissolve them in two ounces of tincture of roses.

This, the author observes, is powerfully astringent.

6. Take the whites of three or four eggs, beat them to froth, and add of  
Roch-alum, finely powdered, one ounce;  
Spirits of wine camphorated,  
Oil of turpentine, of each half an ounce. Mix.



7. Take of Spirits of wine, two pints;  
 Spanish soap, five ounces;  
 Digest them in a gentle heat until the soap  
 is dissolved, then add  
 Camphor, one ounce;  
 Oil of origanum, one ounce.

The quantities of camphor and origanum may be increased upon occasion.

8. Take of Oil of turpentine, one ounce;  
 Spirits of wine camphorated, two  
 ounces.

This is from Bracken: but Mr. Lawrence says, if it be *constantly* used, the turpentine fetches off the hair; a convincing proof of the extraordinary activity of oil of turpentine, when applied to the skin of the horse, though its effect on the human skin is trivial. The camphor, however, has an undoubted share in the effect produced.

EMBRYO (*εμβρυον*, from *εν*, *in*, and *βρυω*, *to bud forth*). It is the rudiment of an animal in the womb, before perfect formation: thus called from its first growth resembling that of the first shoots of a plant, and having no other than a vegetative life.

EMBRYOTOMY (from *εμβρυον*, a *fœtus*, and *τεμνω*, *to cut*), the cutting of a young animal whilst in the womb, in order to its delivery, and the preservation of the mother.

EMETIC (from *εμεω*, *to vomit*), any thing that works by vomiting. Many substances in the materia medica have an emetic quality when applied to the human stomach, but their action is not uniformly the same in brutes. The horse, indeed, on account of a peculiarity of structure in the stomach (see STOMACH), is said to be incapable of vomiting.

EMETIC TARTAR, i. e. *tartarised antimony*. (See ANTIMONY.) Cream of tartar combines with glass of antimony to the point of saturation, and thus the emetic tartar is formed.

EMOLLIENTS (from *emollio*, *to soften*), called also *malaëtics*; medicines which diminish the force of cohesion in our simple solids, and therefore soften and diminish the hardness and rigidity of the parts to which they are applied. They not only relax and supple the solids, but also sheathe and soften the asperity of the fluids. When externally applied, they are termed *emollientia*; internally administered, *demulcentia* seems to be their properest appellation. (See DEMULCENTS.) Dr. Cullen says, that emollients act upon the parts to which they are immediately applied, either by being insinuated into the substance of the solid, where, by diminishing the

density of the whole of the part, they diminish its force of cohesion; or, by being insinuated into the interstices of dry particles, they diminish the friction that might otherwise occur, and thereby render the whole more flexible. The former seems to be the operation of water, the latter of oil.

Emollient topics are formed of water, with oily and mucilaginous substances. Water, particularly when assisted by a moderate heat, is plentifully absorbed from the whole surface of the body. It powerfully relaxes and dilutes, being miscible with almost every animal fluid. Oil relaxes and obtunds what is acrid; and mucilage also sheathes sharp humours. In compositions of this kind, the aqueous part should be freely allowed, for the mucilages require to be largely diluted; gentle friction on the part increases their efficacy; and, as to the heat with which they are applied, it should not exceed what produces a pleasing sensation. From the relaxing quality of emollient topics, and their sheathing of acrimony, it is that they are good sedative applications, when pain from tension, or from irritation, is excited: from the sympathy of the nerves, their efficacy is conveyed also to distant and deep-seated parts; and thus it is that the warm bath proves so powerful a sedative. From the same principles these applications rank with antispasmodics. Emollients, by relaxing the fibres, and increasing the congestion of fluids, promote suppuration; and, lastly, the heat with which they are applied concurs with their other effects to rank them with the tribe of septics; their oily parts particularly dispose them to a putrid acid acrimony.

EMPHYSEMA (from *εμφυσω*, *to inflate*), is sometimes called *inflatio*; and sometimes signifies *leucophlegmatia*. It is any flatulent tumour, but by it is generally understood a soft tumour arising from air being admitted into the cellular membrane. Dr. Cullen means by the word *pneumatosis*, which is his general name for this disease, the swelling formed by air, or else flatus or rarefied fluids. He defines it a tense elastic tumour of the body, making, on pressure under the hand, a crackling noise. The species are, 1. *Pneumatosis spontanea*; that is, when it happens without manifest cause. 2. *Pneumatosis traumatica*, when from a wound in the thorax. 3. *Pneumatosis venenata*, when from the swallowing or external application of poison. 4. *Pneumatosis hysterica*, when accompanied with hysterics. To the first two, however, the emphysema in brute animals may probably be confined. In these the most frequent cause is the piercing of the pleura, and wounding the lungs

by the pointed fragments of broken ribs. Putridity is also a cause, as is seen in mortifications of the external parts. This raises the air, both in vegetable and animal substances, from a fixed to an elastic state. Yet emphysema never happens from a wound inflicted with a pointed instrument, as the blood instantly stops the passage.

An emphysema is manifest by a soft puffy swelling; the tumour gives way on pressure, but, that removed, it instantly returns; a crackling is perceived on stroking the emphysematous part. When the lungs are wounded, a troublesome cough attends, and the matter expectorated is mixed with blood; sometimes air escapes from the lungs into the cavity of the breast, and not being discharged outwardly through the pleura, &c. it occasions great difficulty of breathing, anxiety, a sense of suffocation, stupor; and if relief is not speedily obtained, the patient dies. The air detained in any part of the cellular membrane may produce a mortification there.

When these kind of tumours happen in local disorders, fomentations may be applied to them, made with different antiseptic ingredients. Where the lungs are wounded, bleeding should be resorted to, and repeated according to the degree of difficulty in respiration. To discharge the imprisoned air slight puncture may be made in the parts most distended. But an especial regard must be had, in any of these cases, to the immediate cause.

EMPIRIC (ἐμπειρικός, from ἐμπειρῶ, *calleo*), denotes strictly a *trier*, or *experimenter*, but vulgarly signifies a person who has no true education in, or knowledge of, the grounds of physical science, but ventures, upon hearsay and observation only, to practise medicine. There are veterinary empirics without number.

EMPLASTRUM (from ἐμπλασσω, *to spread upon*), plaster. Plasters are compositions for external use. They do not possess much medical virtue, and are chiefly employed to make retentive dressings, or to keep the parts to which they are applied warm and tight. This they do more equally and steadily than a bandage of linen can, especially if there is no swelling. They are composed of oily and unctuous substances, united with powders, into such a consistence, that the compound may remain firm in the cold, without sticking to the fingers; that it may be soft and pliable in a small heat; and that, by the warmth of the animal body, it may be so tenacious as readily to adhere. When a plaster is softened to the consistence of stiff honey, it is called *cerate*; when softened,

so as to spread easily whilst cold, yet not to run with the heat of the body, an *ointment*; and if betwixt the consistence of an ointment and oil, a *liniment*.

Calces of lead boiled with expressed oils unite with them into a plaster of a good consistence, and form a proper basis for several other plasters. Plasters may also be made of resins, gummy resins, &c. without wax, especially in extemporaneous prescription; but for officinals these compositions are less proper, as they soon grow too soft in keeping, and fall flat in a warm air.

As some difference is observed in the hardness of a plaster, the following proportions are generally adopted: For a soft plaster, take one ounce of expressed oil, one ounce of wax, and half an ounce of any powder; for a harder, add an ounce more of wax, and half an ounce of powder.

The name of *common plaster* (*emplastrum commune*) is frequently given to that called *diachylon* (see DIACHYLON). The different plasters employed for veterinary purposes are, for the most part, mentioned under the names of the leading ingredient in the composition of each.

EMPROSTHOTONOS (from ἐμπροσθεν, *forwards*, or *before*, and τεινω, *to bend*). It is when the body is bowed forward and confined so by a spasmodic contraction. It is a species of TETANUS.

EMPYEMA (from εν, *intus*, *within*, and πυον, *pus*, *matter*), a collection of purulent matter in any part whatsoever, strictly taken; but it is generally used to signify that in the cavity of the breast only, and which sometimes happens upon the breaking of abscesses, or ulcerations of the lungs, or membranes inclosed in the chest. Its cure in the human subject is difficult, from the difficulty of absorbing, by any vessels, such extravasated matter; and therefore often calls for the help of a surgeon to discharge it by aperture externally. Empyema is not to be expected in brute animals, whose diseases approach too rapidly to a termination for such an event.

EMPYREUMA (from ἐμπυρῶω, *to kindle*, or πυρ, *fire*), in chemistry, is the offensive smell and taste which distilled waters, or other substances, receive from being too much exposed to the action of fire.

EMPYREUMATIC OILS. These oils are both of the animal and vegetable kind. They are distilled with a heat greater than that of boiling water; and thus they receive a burnt smell.

EMULGENT, i. e. *milking out*; an epithet applied to the arteries and veins which go from



the aorta and vena cava to the KIDNEYS. According to the ancients, they strained, and, as it were, *milked* the serum through the kidneys.

**EMULSION** (from *emulgeo*, to milk out), a medicine of any kind made in a form resembling milk. Generally these are made from farinaceous seeds, which are beaten up with some fluid, by which their oily parts are intimately blended with it, as in the *Almond Emulsion*.

**EMUNCTORY** (from *emungo*, to clean, wipe away, or drain off). Those passages in the body by which superfluous matters are evacuated, are called *emunctories*. The glands are also thus named.

**ENARTHROSIS** (from *εν*, in, and *αρθρον*, a joint). The ancients called that species of diarthrosis thus, where the round end of one bone moves in the cavity of another, as the head of the femur in the acetabulum of the os innominatum. This species of articulation is also called *the ball and socket*.

**ENCEPHALON** (εγκεφαλον, from *εν*, in, and *κεφαλη*, the head). The encephalon includes the dura mater, the pia mater, the cerebrum, the cerebellum, and the medulla oblongata.

**ENCRAINE**, an obsolete word, signifying a horse *withered*, or injured in the withers.

**ENCYSTED**, a term applied to those tumours which consist of a fluid inclosed in a sac or cyst. See **CYST**. Some writers call a wen *encysted*, but improperly.

**ENDEMIC** (from *εν*, in, and *δημος*, *populus*, *people*), any disease that affects many people or brute animals together in the same country, proceeding from some cause peculiar to the place where it reigns; such as intermittent fevers to marshy places, &c. See **EPIDEMIC**.

**ENEMA**. See **CLYSTER**.

**ENLARGE**, in the manege, is the making a horse go large, that is, making him embrace more ground than he before covered. This is done when a horse works upon a round, or upon volts, and approaches too near the centre, so that it is desired he should gain more ground, or take a greater compass. To enlarge the horse, you should prick him with both heels, or aid him with the calves of your legs, and bear your hand outwards. If he narrows, he is enlarged by pricking him with the inner heel, and sustaining him with the outer leg, in order to press him forwards, and make his shoulders go. Upon such occasions, the riding-masters cry only "Large, large." See the article **IN**.

**ENS**, properly signifies any being or existence; but by the old chemists it was introduced into medicine to express some things that are

pretended to contain all the qualities or virtues of the ingredients they are drawn from in a little room. In Paracelsus *ens* imports the power, virtue, and efficacy, which a thing exerts upon the body.

**ENS VENERIS**, the *flores Martiales*, or *ammoniacal iron*, of the shops. It was first prepared by Mr. Boyle, who gave it this name because of the particles of copper which were imparted by the vitriol which he used in preparing it.

**ENSIFORM**, cartilage. See **CARTILAGO**.

**ENTABLER**, in the manege, is said of a horse whose croup goes before his shoulders in working upon volts; for, in the regular manege, one half of the shoulders ought to go before the croup: thus, they say, your horse *entables*; for, in working to the right, he has an inclination to throw himself upon the right heel; which fault you may prevent, by taking hold of the right rein, keeping your right leg near, and removing your left leg as far as the horse's shoulder. A horse cannot commit this fault without committing that called **ACULER**, but aculer may be without entabler. See **ACULER**.

**ENTERFERE**, or **INTERFERE**. See the article **INTERFERE**.

**ENTERITIS**, an inflammation of the bowels. Dr. Cullen places this genus of disease in the class *Pyrexia*, and order *Phlegmasia*. He distinguishes two species, viz. *enteritis erysipelatoza* and *enteritis phlegmonodea*.

**ENTEROCÉLE** (from *εντερον*, *intestinum*, a gut, and *κηλη*, *tumor*, a swelling), is a **HERNIA** or rupture, from the bowels pressing through or dilating the peritonæum, so as to fall down into the groin.

**ENTERO-EPIPLOCELE** (from *εντερον*, an intestine, *επιπλον*, the omentum, and *κηλη*, a tumor), is when both the omentum and intestines protrude through the integuments of the belly.

**ENTERO-HYDROCELE** (from *εντερον*, an intestine, *υδωρ*, water, and *κηλη*, a hernia), a dropsy of the scrotum, with a descent of the intestine.

**ENTEROMPHALUS** (from *εντερον*, an intestine, and *ομφαλον*, the navel), a rupture of the intestine at the navel.

**ENTERORAPHIA**, the suture of a gut when wounded. It is generally performed by the glover's stitch, and a portion of the thread is left at each end of the seam, to connect it to the necessarily pre-existing wound of the muscles, &c. of the belly, till the wounded gut adheres to the wound of the belly.

**ENTIER**, in the manege, is used for a fort

of resty horse that refuses to turn, and is so far from following or observing the hand, that he resists it. If your horse is entier, and refuses to turn to what hand you will, provided he flies or parts from the heels, you have a remedy by putting on him a cavesson.

ENTREPAS, in the manege, is a broken pace or going, and indeed properly a broken amble; that is, neither walk nor trot, but somewhat of an amble. This is the pace of such horses as have no reins or back, and go upon the shoulder, or of such as are hurt in their limbs.

ENULA (a corruption of *heluna*, or *kelenium*, so called from Helene, the island where they grow), called also *inula*, *enula campana*, *aster-omnium maximus*; SCABWORT, and ELE CAMPANE. Platerus calls it *aroma Germanicum*.

Miller enumerates thirty species; and Boerhaave makes it a species of *aster*. It is the *inula helonium*, or *inula foliis amplexicaulibus ovatis rugosis, subtus tomentosis, calycum squamis ovatis*; Class SYNGENESIA, Ord. POLYGAMIA SUPERFLUA; Linn. Gen. Plant. 956. It is a large plant, with long wrinkled leaves that are serrated; of a pale green colour above, and hoary underneath; the flowers are yellow, and of a discous kind, and are followed by oblong seeds, winged with down; the roots are short and thick, unctuous to the touch, brown or blackish on the outside, and whitish within. It is perennial, grows wild in moist rich soils, and flowers in June.

The fresh roots have a weak, but not very grateful, smell; when perfectly dried, they are most grateful: when chewed, they discover at the first a kind of rancid glutinous taste, quickly succeeded by an aromatic bitterness, which by degrees becomes more pungent. When administered in human diseases, their virtues are diaphoretic, diuretic, and stomachic; if taken freely, they loosen the belly: they are said powerfully to assist expectoration in coughs and humoral asthmas. The veterinary practitioners of the old school frequently employed this remedy, especially in the diseases of horned cattle. Mr. St. Bel, Mr. John Lawrence, and some later writers, also include it occasionally in their prescriptions. The powder of the roots is the only form in which it is usually given.

ENURESIS, an involuntary discharge of urine. Dr. Cullen places this genus of disease in the class *Locales*, and order *Apocenses*. He distinguishes two species: 1. *Enuresis atonica*, when some other disease hath injured the sphincter of the bladder; 2. *Enuresis irri-*

*tata*, from compression or irritation of the bladder.

ENYSTRON (*γνυστρον*, from *ανω*, to *perfect*), the last or fourth ventricle in animals that chew the cud, which completes the digestion. According to Aristotle, it is a second ventricle, or thick part of the stomach of ruminating animals, in which the food is concocted. Corraeus makes it the same with *Abomasum*.

EPARER, a word used in the manege to signify the flinging of a horse, or his striking or jerking out with his hind-legs. In caprioles a horse must jerk out behind with all his force, but in balotades he strikes but half out, and in croupades he does not strike out his hind-legs at all. All such jerking horses are deemed restive.

EPHEMERA (*εφεμερος*, from *επι*, *super*, *upon*, and *ημερα*, *dies*, *a day*), a fever that terminates in the compass of one day.

EPIDROSIS (from *επιδρω*, to *break out in a sweat*). This is otherwise called *Desudatio*.

EPICRANIUS, the scalp muscle in the horse. See AAA, Pl. VI. and the description under the article EXTERIOR.

EPIDEMIC (*επιδημικος*), a term applied to such fevers, or other distempers of cattle, as prove to be catching or infectious from a peculiar state of the atmosphere. Medical writers distinguish between those diseases that spread over many countries and nations at once, and those that are limited and confined to particular provinces or places. The first they term *epidemic*, the latter *endemic*: we propose, however, to treat here of those diseases that appear at some particular seasons, whether they be more or less universal, or more or less infectious.

History affords us many dismal relations of this nature among horses and other brute creatures in former ages. These, says GIBSON, were indeed so terrible, that they could be reckoned nothing less than heavy judgments from heaven, being generally followed with famine and pestilence among men, which swept off the greatest part of the inhabitants. But, happily, such universal devastations have more rarely happened in latter times, and much less among us than in foreign nations.

It is however certain, that, even in our times, horses, as well as men, are liable to epidemic fevers, and to several distempers that may be reckoned of the pestilential kind. These prove more or less dangerous according as the previous state of the animal's constitution happens



to be more or less depraved, or according as the distemper itself happens to be more or less severe; for many of the complaints that appear in this manner prove but slight, and even go off without much help from medicine; whilst others are more formidable, and perhaps prove suddenly fatal to many horses. Happily, however, when such maladies happen in our climate, they are usually of short continuance.

*Pestilential* FEVERS are such only as differ in degree from those of the common malignant kind, which occur at particular seasons, and do not always prove fatal, though the causes from whence such fevers proceed may be very different, and, to us, in a great measure unknown. Yet, however that be, GIBSON has observed, that their terminations are much more sudden than any other, so as even scarcely to allow time for the administration of medicines. The fevers that resemble these most in our climate, he says, always begin with great stupidity, swellings of the eyes and eye-lids, swellings of the parotid glands and other kernels about the throat, a profuse running of a dusky-coloured matter from the nose, and a flux of the same kind of matter from the mouth, and of a foetid smell; sudden large swellings of the limbs, especially about the joints, which are often followed by the apoplexy, having all the same symptoms that arise from poison. He directed these cases to be treated with bleeding, clysters, rowels, and other evacuations, and afterwards with castor, assa-foetida, and volatile salts; balls or drink made with gentian, zedoary, gallangals, white dittany, bistort, tormentil roots, contrayerva, and Virginia snakeroot, with camphor, mithridate, or Venice treacle. "But," says he, "as these deadly distempers happen but rarely among us, so the sickness usually rages but for a short season. I can remember this sort of sickness but once in my time, above thirty years ago, which almost ruined many farmers in several parts near London. It came in a very dry season, and, after about three months' continuance, began to abate and grow less deadly, and soon after entirely ceased." After all, however, it is not likely that the same plan of treatment in an existing epidemic fever should be considered as any guide to the veterinary practitioner in treating the epidemic fever that may occur next.

But the most common complaints of horses may be sometimes counted epidemical, when they seize many horses at once, become a general complaint, and are attended with unusual symptoms. Sometimes even catarrhs are so

universal, especially amongst young horses, that we can scarcely enter a stable where it has not spread itself with the signs of uncommon malignity. These colds, however, are often far from proving fatal, or even injurious. GIBSON, indeed, asserts, "that, *with proper care*, they tend greatly to the improvement of a horse's health and constitution, render him more hardy and durable afterwards, *recovering* many horses to perfect soundness that before were full of complaints."

Though we shall describe the epidemical catarrh under the head of INFLUENZA, it may be proper here to mention the facts recorded by GIBSON on the subject. In *epidemical colds*, he says, the glands about the throat, and those under the ears, are more swelled than in common and accidental colds; and, where a horse's constitution is good, they may be cured as other colds, observing only that his head and neck be more carefully covered and kept warm, with a view to promote a constant perspiration in those parts.

About the end of the year 1732, there was a very remarkable distemper of this kind among the horses in London, and in several other parts of the kingdom. They were seized suddenly with a dry sounding cough, which shook them so violently, that some of them were often ready to drop down with hard straining and want of breath. Their throats were raw and sore, and many of them had the neighbouring glands swelled, and painful to the touch. For the first two days most of them refused all manner of food, as well as water, and had so many other bad symptoms, that, when this distemper first broke out, it seemed to promise a great mortality among them. Indeed, the only good sign they had was a running at the nose, which generally began on the third day, and continued in so profuse a manner for five or six days, that some of them, in that interval, discharged as much as two or three pailfuls of purulent matter of a good consistence and colour. While this profuse secretion continued, they could not feed much, though their appetites were not deficient, because the matter mingled so much with their food as to render it altogether disagreeable. Hence they lost their flesh exceedingly whilst the violence of the complaint lasted; but, as soon as the discharge abated, they began to eat voraciously, and soon recovered. This distemper, though seldom fatal, yet was so very catching, that, when any horse was seized with it, those horses that stood on each hand of him in the stable were gene-

rally infected as soon as he began to run at the nose.

"While this sickness lasted," says GIBSON, "above a hundred of the troop-horses under my care were seized with it. I always caused the sick horses to be removed from the found as soon as they were taken ill, and put by themselves, as in an hospital. And, in one troop of horse-grenadiers, we filled a stable of thirty-six stalls in three days; an infirmary of five stalls, and another of eighteen, in three or four days more: nevertheless all of them recovered in a short time. Also many gentlemen's horses, where I was concerned, did well, without any remaining injury from the distemper; and it was observable, that some, who had been subject to a dry cough before this sickness, continued more free from it for some time afterwards, though I do not remember any of them were absolutely cured of it. The horses that chiefly escaped the distemper were those that had been kept in constant strong exercise, or full-aged old horses, many of which remained uninfected, though very much exposed to it."

The method of treating this malady, as may be supposed, was simple and easy. As soon as the horses were seized, they were bled plentifully, which gave them sensible relief, many of them being feverish and very short-breathed. Afterwards mucilaginous drinks, in which linseed, liquorice, and garlic, were the predominant materials, were exhibited; and with these were given balls made of the aromatic powders, mixed with honey, balsam of sulphur, and oil of aniseed. In some cases it was thought necessary to give about half a pint of white wine, with a few ounces of oxymel of squills. After they began to run at the nose, the complaint began to abate; and, as soon as the horse looked somewhat lively, and eat up his allowance, which was chiefly scalded bran and hay, the use of medicines was suspended, and he was allowed plenty of water, with free air and moderate exercise.

This disease among horses, it seems, began, in some places near London, about the middle of September. In London it began in October, the weather being unusually foggy. There it became general in about six weeks or two months, and made so swift a progress, that, in the space of one week, there was scarcely a stable without the infection. The time of its continuance in each individual was but short. Some horses were perfectly recovered in a week or ten days, some in a fortnight, and few continued under it longer than three weeks or a month before they recovered their flesh, and

their usual strength and vigour. Scarcely any indeed did amiss, except such as had been unskilfully treated, by syringing their noses with sharp stimulating liquids, which, by irritating the membranes, already too much inflamed, brought on ulceration, and a continued running of purulent matter that could not be stopped; with swellings of the glands, which ended in caries of the bones.

About two years after this, viz. in the spring of 1734, another epidemical disease happened. This proved more fatal than the former, though, from its short continuance, it was much less taken notice of; for many horses recovered so far as to be out of danger in two or three days. In this the horses coughed vehemently in the streets, and many of the hackney-coach-horses and cart-horses, that were obliged to work, were observed to run violently at the nose. This latter distemper, however, was not so universally talked of; though GIBSON asserts, that vast numbers were seized with it, and some died suddenly. In one week he had nearly a hundred of the troop-horses, besides many belonging to private persons, seized with such violent symptoms, that he was at first apprehensive of its proving very fatal. Under proper treatment, however, scarcely any one did amiss. The symptoms described by this writer are the following:

The horses were seized suddenly with a high degree of fever, and their flesh apparently seemed so sore and tender, that they could scarcely bear to be touched. They were generally costive, staled but little, and that with pain and straining, and the urine was of a very high colour. They refused all manner of sustenance, and were so extremely sick that they could not drink; neither would many of them even lie down till the disease came to a crisis: yet, upon treating them with cooling and opening medicines, and with plentiful bleeding, they generally recovered. GIBSON describes the several symptoms that appeared upon the turn of the complaint. Some of the horses affected with it had very hot and inflamed eruptions, which broke out in several parts with blisters, resembling the erysipelas. Those that came to maturity appeared generally on the inside of the arm or fore-leg, near the elbow, or towards the hock; and some of them had large bags of water collected on their sides or bellies, or towards their flanks, near the inguinal glands, constituting what the farriers called the *water-farcy*. Some had been costive before they were seized, for their dung was extremely hard and black.



Under these circumstances, soft and oily clysters were injected, to relax the bowels, and in some cases the bleeding was repeated; cooling infusions were given, with nitre, cream of tartar, &c. with a view to promote both dung and urine, and by that means to abate the febrile heat. This, in fact, not only took off the fever, but caused the critical discharges from the boils, which at first had but a very indifferent aspect, to digest into good matter, so that none of the horses that were thus treated did amiss; and where some died in the hands of unskilful persons, it was generally owing to their giving them cordials, and cloying them with sugar-sops before the fever abated and their stomachs were in a condition to receive food.

This distemper, it appears, did not continue violently in London above three weeks or a month; and those that were seized about the latter part of that time had it more favourably, and required little more than bleeding. Those horses that appeared surfeited were purged, and had antimonial powders given them, which generally perfected their cure; and some were sent to the salt marshes, or other spring grass, the sickness having happened just before the grass season.

GIBSON says, he has known individual horses seized with the symptoms here described at other times, when the distemper was neither infectious nor epidemical; and these were always relieved with bleeding and other evacuations, especially with diuretics and diluents, such as water-gruel or bran-water.

The *strangles* sometimes may be ranked among the epidemical diseases of horses. It seizes horses, both young and old, that have not had it before, and is clearly infectious. In this case there is usually a fever, with loss of appetite, and other symptoms of a malignant nature.

In some seasons the *spring colds* among young horses are accompanied with an epidemical fever, especially about the time of shedding their teeth and putting out of their tusks; and, without some care and diligence be used, these colds are apt to leave an habitual cough, with an enlargement of the maxillary glands, and a moist discharge from the nose, which sometimes ends in the glanders.

GIBSON asserts, that the symptoms of *Farcy* often appear during the prevalence of epidemic fevers; in fact, that it becomes infectious, and makes a quick progress on every horse that is seized with it, "spreading universally over the whole body, forming deep abscesses among the

interstices of the larger muscles, discharging great quantities of foetid matter, like the grounds of beer."

Nor is it impossible that the disease called *staggers* may arise from contagion; if not as an original affection, at least as a collateral symptom. "About eight years ago," says GIBSON, "several young horses were seized with the staggers, attended with such uncommon symptoms, as put the ordinary practitioners quite to a stand. One thing was visible to every body, that their heads were greatly disordered; by which most of them, more or less, lost the use of their limbs: some were only cramped and convulsed in a moderate degree, and were soon relieved by bleeding and cephalic medicines, with proper embrocations; in others, this new distemper seemed to have a near affinity to a hemiplegia, or that sort of palsy which, in men, takes away the use of one side, but not to such a degree as happens to the human body.

"I had a horse that was so bad, that, when he came to be moved, he was held up on the affected side by several men, who were forced to support his whole weight. When he was let loose in a riding-house, he turned round, like a person in a vertigo, and fell down suddenly; but this rotation did not proceed altogether from the causes which usually produce the vertigo in men, but from his wanting the use of his limbs on the off side, which made him turn round to his near side; the limbs of his near side not being affected, but firm, which was the reason of his circular motion, for he could not get straight forward for want of use in the other. Several horses were taken in the same manner, but in a less degree; and some were convulsed, and had their mouths sometimes pulled to one side, but were soon relieved; for those that were only convulsed in this manner retained somewhat of an appetite.

"Another remarkable case happened at this time, of a horse that was so much convulsed, that, whenever he offered to raise his head in the least degree, nothing could be seen of his eyes but the whites, which made him look very ghastly; but as this horse had also a strong fever, and was affected on both sides alike, so he never lost the use of his limbs, but only went staggering, and with a catching from the convulsive cramps. This horse was recovered by bleeding and other plentiful evacuations, with the constant use of cephalics, which were given him in great plenty, especially *castor*, which had such an effect upon him, that it kept him perspiring above three weeks without intermission,

in so much that all his cloaths and the whole stable were perfumed by it; and if these remedies were but one day omitted while the convulsions lasted, the horse always fell back, and was the worse for it; so that he must inevitably have died in the hands of any common practitioner, none of whom I ever knew treat convulsed horses after this manner.

"As to the horses that were affected on one side only, their lameness was more apparent, so that I caused them to be put into close stalls, and littered quite up to their bellies, and also had a good quantity of straw piled up against the wall or partition next the lame side, that they might rest upon it, and not be exposed to fall down. One gentleman, who had a very fine horse seized with this distemper, ordered the whole side of the stall to be lined with a triple bafs matting, and his litter was spread all across the stable, pretty deep, from the end of the standing; which method was followed with most others that were under my care, and affected in the same manner, that they might not hurt themselves in case they should move backwards and fall down, but lie easy till they were helped up; for scarce any of them were able to rise of themselves. But most of these horses leaned their lame sides altogether against the stall, without moving their posture, till they had pretty well recovered the use of their limbs, which generally happened in ten or twelve days; others that were less affected recovered much sooner, so as to be able to stand without leaning."

These had all of them fever when they were first seized, which is a usual attendant on convulsive disorders; but, after bleeding and other evacuations, their fevers abated, and they began to feed on scalded bran, and pick a little hay by the hand. They were bled plentifully, and had clysters and lenitive purges; they were at the same time treated with cephalics and stimulating embrocations outwardly.

According to the same experienced writer, the jaundice, together with the staggers, are sometimes epidemical, there having been many young horses seized with this kind of malady. It is described to have occurred more remarkably in some seasons than others, and generally about the end of the spring or the beginning of summer. It is no other than a bilious fever, and seems to be the same mentioned by SOLEYSEL in his chapter on "*Diseases of the Head caused by choleric Humours*," which brought a great mortality among the horses in some parts of France and Germany in the years 1660 and 1661, and afterwards in 1669 and 1670. This

is seldom universal or of long continuance in Britain; but, when it comes, it proves fatal to a great number of horses, probably for want of knowing the true origin and source from whence arise those various symptoms by which the head, and the whole body also, are so considerably affected.

On epidemical maladies it may be finally observed, that it should be the endeavour of the veterinary practitioner to mark the symptoms and progress of each with accuracy; so that, by successively recording the most important facts, the accumulation of these may gradually lead to a correct system of practice, and, eventually, to a knowledge of the principal causes.

For some hints on epidemic diseases in horned cattle, see the article CATTLE.

EPIDEMICAL CATARRH. See INFLUENZA.

EPIDERMIS (from *ἐπι*, upon, and *δερμα*, the skin), the scarf-skin. See CUTICLE.

EPIDIDYMISS (from *ἐπιδιδυμις*, from *ἐπι*, upon, and *διδυμος*, a testicle). The epididymis may be reckoned a kind of testis accessorius. It is a body on the upper part of the testicle, which is formed by a continuation of the tubes that constitute the testicle. The continuance of the epididymis upwards forms the vasa deferentia.

EPIGASTRICS. The external iliac artery divides into two branches at the ligamentum Poupartii; one of them is the epigastric, which runs to the inside of the rectus abdominis, at whose upper part it communicates with the internal mammary. The internal iliac veins, a little before their going out of the belly, send off from the inside the epigastric veins, which send branches to the neighbouring glands, and run up the muscoli recti abdominis, and then advancing, join the mammary.

EPIGASTRIUM (*ἐπιγαστριον*, from *ἐπι*, super, upon, and *γαστήρ*, venter, the belly); the upper part of the abdomen, reaching from the cartilago ensiformis till within a hand's breadth of the navel. Its two sides are hypochondria; the right of which covers the greatest part of the liver, the left the spleen, part of the stomach, and colon.

EPIGLOTTIS (from *ἐπι*, supra, above, and *γλωσσα*, lingua, the tongue); thus called from its position above the root of the tongue. It is one of the five cartilages of the LARYNX.

EPILEPSY, a disease which occurs in various animals. The epilepsy seizes a horse periodically, but often at uncertain times, and for the most part suddenly, with little or no pre-



vious symptoms ; though in man there is generally, preceding the fit, excessive pain in the head, drowfiness, stupidity, loss of memory, &c. which cannot be so clearly distinguished in brute creatures. It generally proceeds from the same causes that produce vertigo, apoplexy, and lethargy ; to all which it has a near affinity. Sometimes the epilepsy proceeds from a plethora or fulness of blood, which is found to be gross and fizy. When convulsive diseases happen to old horses, they generally prove incurable ; because nature, being languid, gives but little assistance to the operation of medicines, or any other means made use of for their recovery.

A horse in the epilepsy reels and staggers, his eyes are fixed in his head, he has no sense of what he is doing, stales and dungs insensibly, runs round, and falls suddenly, sometimes immoveable, with his legs stretched out, as if he were dead, except only a very quick motion of his heart and lungs, which makes him work violently at his flanks, and sometimes an involuntary motion and shaking of his limbs. At the going off of the fit, he generally foams at the mouth ; the foam is white and dry, like that which comes from a healthy horse when he champs upon his bit.

It is common, in the cure, first of all to bleed ; but, if the horse be low in flesh, or has come off any hard journey, or is old, this should be sparingly done. Indeed, it is altogether improper in the majority of cases ; as the epilepsy is usually a disease of debility, and not, as in the apoplexy, occasioned by plethora.

When the paroxysm is over, Gibson directs the following ball to be administered, with a proper drink to wash it down :

Take of Assa foetida, half an ounce ;  
Castor, pounded, two drachms ;  
Venice turpentine, the same quantity ;  
Diapente, one ounce :  
Make them into a ball with honey, adding  
Oil of amber, one drachm.

The drink is to be made as follows :

Take of Pennyroyal,  
Mistletoe, of each a large handful ;  
Valerian root, one ounce ;  
Liquorice, half an ounce.

Boil them in a quart of water : let it be poured off, and administered after the ball.

Let this be repeated, sometimes once, sometimes twice a-day at first, and afterwards once in two or three days.

Gibson farther directs purges and clysters, at proper intervals, to keep the body open, and prevent a relapse.

EPIPHORA (επιφορος, from επιφέρω, *infero*, to carry into), signifies an inflammation of any part, but is more especially used to signify a defluxion of humours upon the eyes.

EPIPHYSIS (επιφυσις, from επιφυω, *accreſco*, to grow to), is when one bone adheres to another by simple contiguity, without any proper articulation.

EPIPLOCELE (επιπλοκηλη, from επιπλοον, *omentum*, and κηλη, *tumor*, a swelling), a rupture of the omentum, which falls down into the scrotum.

EPIPLOIC, a term applied to the artery and veins of the omentum, or caul.

EPIPLOIS, *dextra, posica, sinistra*, branches of the coeliac artery bestowed on the omentum, or caul.

EPIPLOON (from επιπλωω, *to sail over*), because it seems to float upon the guts ; the omentum, or caul.

EPISPASTICS (επισπαστικά, from επισπασω, *to draw*). What the ancients called *epispastics* were such external applications as only rubified the skin : they drew the fluids more copiously to the part to which they were applied ; and, according to the different degree of effect, received different names. The slightest were called *Phænigmoi*, the next were *Sinapisms*, the next were *Vesicatories* or *Blisters* (see the article *CANTHARIDES*), and the strongest were *Caulistics*.

EPISTAXIS (επισταξις). Hippocrates expresses by it repeated distillations of blood from the nose. Dr. Cullen uses this term to distinguish bleeding at the nose as a genus of disease, which he places in the class *Locales*, and order *Hæmorrhagie*.

EPISTHOTONOS, the same as EMPROSOTONOS, *i. e.* when the tetanus bends the body forward.

EPITHEM (επιθημα, from επι, *upon*, and τιθημι, *to lay upon*, or *apply*), any outward application, but generally those of a liquid form, like a fomentation.

EPULOTICS (επαλωτικά, from επαλωω, *to cicatrize*), topical medicines which dry up humidity, repress fungous flesh, and dispose wounds or ulcers to be covered with skin. Dry lint, gentle compress, and the cerate with lapis calaminaris, are the general applications to ulcers in the human subject ; but those of brute animals require epulotics of a more powerful

kind, such as strong solutions of the metallic salts, &c.

**EQUESTRIAN ART.** See HORSEMANSHIP.

**EQUITATION, Riding.** See HORSEMANSHIP. During this exercise, all the viscera are shaken, and pressed against each other; at the same time the pure air acts with a greater force on the lungs. Weakly persons, or those whose stomachs are infirm, should be cautious of riding before their meals are somewhat digested.

**EQUIVOCAL GENERATION**, is the production of plants without seed; or the formation of animals without parents, in the natural way of coition between male and female; which is now believed never to happen, but that all bodies are unequivocally produced.

**ERECTORES CLITORIDIS**, are two muscles arising from the protuberances of the ischium in the female, and are inserted into the spongy bodies of the clitoris, which they erect in coition.

**ERECTORES PENIS**, are two muscles in male animals, arising fleshy from the protuberances of the ischium, below the beginning of the cavernous bodies of the yard, into whose thick membranes they are inserted. Their use is to pull the yard towards the os pubis, whereby its greatest vein is compressed, and the refluent blood denied a passage under those bones, which makes it swell.

**ERGOT**, a name given to a stub, like a piece of soft horn, about the bigness of a chestnut, which appears behind and below the pastern joint of a horse, and commonly hid under the tuft of the fetlock. It is to be taken out to the quick with an incision-knife, in order to get at a bladder of fluid that lies covered with the ergot. This operation, in Holland, is frequently performed upon all four legs.

**ERGOT.** So the French call rye which is diseased in a particular manner, from its grains assuming somewhat of the form of a cock's spur.

**ERODE**, or **EROSION**, the same as **CORROSION**, which see.

**ERRHINE** (*ερρινον*, from *εν*, in, and *ρις*, *nasus*, the nose), a powder to snuff up the nose, to occasion sneezing, or produce a discharge from the head.

**ERROR LOCI.** Boerhaave is said to have introduced this term, from the opinion that the vessels were of different sizes for the circulation of blood, lymph, and serum; and that, when the larger sized globules were forced into the lesser vessels by an error of place, they were ob-

structed. But this opinion does not appear to be well grounded.

**ERUPTION** (from *erumpo*, to break out), any breaking out on the skin. See SKIN.

**ERYSIPELAS** (*ερυσιπελας*). This word is variously derived. Constantine and Martinus derive it from *ερωω*, to draw, and *το πελας*, the neighbouring parts. The Latins call it *Ignis sacer*, when it is of the ulcerated kind. In Switzerland it is called the *Violet*; some name it the *Rose*, from its red colour. Dr. Cullen places this genus of disease in the class *Pyrexia*, and order *Erythematata*. He distinguishes two species, viz. 1. *Erysipelas Vesiculosum*, in which the inflammation occupies broad spaces, and on which large vesiculations form themselves: 2. *Erysipelas Phlyctenoides*, in which there are many small inflamed pimples on the skin, which soon are formed into numerous small vesicles. Horses and other cattle are liable, though rarely, to erysipelatous inflammation. When it occurs, it very soon goes on to gangrene, especially in animals that have been much debilitated.

**ESCHAR** (*εσχαρρα*), in surgery, a hard crust or scab upon the flesh, formed by the application of a red-hot iron, a caustic, or some sharp application to the body. Also a slough formed on a wound or ulcer, as in the instance of mortification.

**ESCHAROTIC.** See CAUSTIC.

**ESCULENT**, an appellation given to such plants, or the roots of them, as may be eaten; such are beets, carrots, turneps, &c.

**ESSENCE**, is strictly that which constitutes the nature of any thing, and makes it be what it is; but, in medicine, it is used to signify the concentrated properties or virtues of any simple or composition.

**ESSENTIAL OILS**, are such as were really in a plant, and drawn from it by distillation, in distinction from those made by insolation.

**ESSENTIAL SALTS**, are such as will crystallize in the juice, or infusion, of plants; in distinction from those made by incineration, and appear to have been actually contained in the plant.

**ESTRAC**, in the manege, a term applied to a horse that is light bodied, lank bellied, thin flanked, and narrow chested.

**ESTRAPADE**, in the manege, the defence of a horse that will not obey, but, to get rid of his rider, rises before, and, while his fore-hand is yet in the air, yerks out furiously with his hind-legs, striking higher than his head was before, and, during his countertime, goes back rather than advances.

**ETHER**, or **ÆTHER** (from *αιθω*, *ardeo*, *splen-*



*deo, bright and splendid*), called *liquor ethereus vitriolicus, nitrosus, muriaticus*, according to the acid of which it is formed. It is a chemical combination merely of alcohol with the oxygen of the different acids made use of in the process of its formation.

Various are the processes by which ether is made. The following seems to be the best. Put a certain quantity of alcohol into a receiver, and very gradually add an equal quantity of concentrated sulphuric acid, shaking them together, and waiting till the first addition is incorporated before any more is put in; for, if they are poured together too rapidly, the succeeding heat and ebullition will dissipate a part of the mixture, run the risk of breaking the vessel, and endangering the operator. After having mixed the whole in this gradual mode, the retort must be then placed on a heated sand-bath, a receiver adapted, and the mixture heated to ebullition. Alcohol first passes over; soon after which streams of fluid appear in the neck of the retort and within the receiver, which denote the rising of the ether. Its smell is agreeable. Vapours of sulphureous acid succeed the ether, and the receiver must be taken away the moment they appear. If the distillation be continued, sulphureous ether is obtained; and the oil, which is called ethereal oil, or oil of wine, and that which remains in the retort, is a mixture of undecomposed acid, sulphur, and a matter resembling bitumen. In this operation the sulphuric acid is decomposed; and the oxygen, by combining with the hydrogen, and the carbon of the alcohol, has formed three states, which we also find in the distillation of some bitumens: 1. A very volatile fluid, or ether; 2. Ethereal oil; 3. Bitumen. If the sulphuric acid be digested upon ether, it converts the whole gradually into ethereal oil. When the ether is mixed with sulphureous vapours, it must be rectified by a gentle-heat, a few drops of alkali being first poured in to combine with the acid.

This fluid, besides its appellation of *ether*, is by some named *acidum vitrioli vinosum*; by others *spiritus ethereus*; and in the Pharm. Edinb. it is entitled *sp. vini athereus*: and as it may be obtained by means of the vitriolic, nitrous, and marine acids indifferently, so, from the name of the acid employed, the terms *vitriolic, nitrous, or marine ether*, have obtained.

How far this active remedy is suitable for veterinary purposes is left to the inquisitive practitioner to ascertain.

**ETHEREAL OIL.** The chemists thus call

a highly rectified oil, that differs little from an inflammable spirit, as the oil of turpentine, and the like.

**ETHIOPS**, or **ÆTHIOPS**, a name given to several different remedies, in powder, on account of their black colour. In the diseases of horses, horned cattle, &c. occasional use is made of,

1. **ANTIMONIAL ÆTHIOPS**, which is prepared thus:

Flux equal parts of antimony and sea-salt in a crucible, and knock off the scoria; then rub equal parts of the regulus, made in this manner, and mercury together till they are incorporated.

In cutaneous diseases, glandular obstructions, and many chronical diseases, it is worth a trial; a few grains to be given at first, and the quantity increased as the animal can bear it. Malouin, in his chemistry, gives various processes for uniting antimony with mercury; some of which are more speedy, and others more perfect, in forming this combination.

Huxham gives the following receipt for his *æthiops antimonialis*:

Take of Quicksilver, four ounces;  
Crude antimony, three ounces;  
Flowers of sulphur, two ounces:

Rub them together in a marble mortar till the quicksilver disappears and all the ingredients are thoroughly united.

2. **MARTIAL ÆTHIOPS** is a medicine not calculated for veterinary purposes.

3. **ETHIOPS MINERAL**, now named *quicksilver with sulphur*, though sometimes given to horses, is but an inactive and uncertain medicine. The usual method of preparing it is to rub equal parts of pure mercury and flowers of sulphur in a mortar till the mercury disappears, and a very black powder is formed: but a more intimate coalition of the mercury with the sulphur may be effected by melting the sulphur in an iron ladle, then adding the quicksilver, and stirring them together till the mixture is cold. If the mixture seems disposed to flame, which may be known by its swelling up and growing suddenly consistent, carefully cover it: thus it is soon checked. The small heat necessary here is in no danger of dissipating either the mercury or the sulphur.

As sulphur so eminently abates the power of all the more active minerals, this medicine is thought by many to be no farther useful than as it is of efficacy in the stomach and bowels; for which reason, if given at all, it

should be given largely, and continued for some time.

4. VEGETABLE ÆTHIOPS is made by burning the sea-wrack into a black powder. The soap-boilers call this *kelp*.

ETHMOID BONE (from *ἔθμος*, *cribrum*, a sieve, and *εἶδος*, *forma*, *shape*), the sieve-like bone. It is situated in the middle of the basis of the os frontis. It is perforated by a number of small holes, through which the fibres of the olfactory nerves pass; for which it has this name. It is joined to the os frontis and sphenoides by the futura ethmoidalis. In its middle it has a small process called *crista galli*, to which the fore-end of the falx is tied. From its under-side there goes a thin bone, which divides the cavity of the nostrils in two; the lower end of which is grooved with the vomer. On each side of this partition it has several small spongy laminæ, called *ossa spongiosa*, which are full of little cells at their juncture with the ethmoides. The two external laminæ, or the *ossa spongiosa*, make part of the orbit at the great canthus; and they are called *plana*, because they are smooth and even.

EULE (*εὐλή*), a worm, properly that bred in ulcers.

EVACUANTS, such medicines as, by their stimulus, augment the excretions of the body. Thus purgatives, sudorifics, diuretics, &c. may be called *evacuants*.

EVACUATION, any diminution of the animal fluids, whether it be by cathartics, blood-letting, or any other means.

EVACUATORS, one of the classes into which the whole materia medica has been divided. These remedies visibly promote discharges, some by sweat, some by urine, and others by excretion of the fæces or dung; and all these allow of several gradations, some being stronger, and some weaker, than others.

EVAPORATION, in chemistry, is one of the methods of recovering solid bodies from their solutions. This is effected by the means of heat, which evaporating the fluid part, that is, forcing it off in steam, the matter which was dissolved therein is left behind in its solid form.

The general rules for evaporation are, to place the matter in a flat, shallow, wide vessel, so that a large surface of the liquor may be presented to the air; for it is only from the surface that evaporation takes place. The degree of heat ought to be proportioned to the volatility of the substance to be evaporated, and to the degree of fixity of the matter to be left; thus, the less fixed the matter to be left is, and

the more strongly it adheres to the volatile parts, the less the degree of heat ought to be; and, in such cases too, a forcible current of air is sometimes scarcely admissible: on the contrary, when the matter to be evaporated is not very volatile, and when the matter to be left is very fixed, and does not adhere strongly to the volatile part, the evaporation may be urged by a strong heat, aided by a current of air directed upon the surface of the liquor.

This process is applicable to the solutions of all those substances which are less volatile than the menstruum, or which will not exhale by the heat requisite for the evaporation of the fluid: as the solutions of fixed alkaline salts; of the gummy, gelatinous, and other inodorous parts of vegetables and animals in water; and of many resinous and odorous substances in spirits of wine.

Water extracts the virtues of sundry fragrant aromatic herbs almost as perfectly as rectified spirits of wine; but the aqueous infusions are far from being equally suited to this process with those made in spirits; water carrying off the whole odour and flavour of the subject, which that lighter liquor leaves entire behind it. Thus, a watery infusion of mint loses in evaporation the smell, taste, and virtues, of the herb; whilst a tincture drawn with pure spirits yields, on the same treatment, a thick balsamic liquor, or solid gummy resin, extremely rich in the peculiar qualities of the mint.

In evaporating these kinds of liquors, particular care must be had, towards the end of the process, that the heat be very gentle; otherwise the matter, as it grows thick, will burn to the vessel, and contract a disagreeable smell and taste: this burnt flavour is called *empyreuma*. The liquor ought to be kept stirring during the evaporation; otherwise a part of the matter concretes on the surface exposed to the air, and forms a pellicle which impedes the farther evaporation.

EVIL, a term in vulgar speech synonymous with DISEASE. Thus, amongst farriers, we have the *colt*-evil, the *poll*-evil, &c. for which modern veterinarians supply more appropriate names.

EXACERBATION, *i. e.* paroxysm. See PAROXYSM.

EXANTHEMA (from *εξανθεω*, *effloresco*, to flower out), such an eruption of the skin as the measles: it is generally attended with a fever, and terminates in a rash. *Exanthema Febrile* is an order in Dr. Cullen's Nosology.

EXCIPIENT. In prescriptions, that is called the *excipient* which receives the other ingredi-



ents, and gives them a proper form, as official electuaries, conserves, robs, &c.

**EXCORIATION**, an abrasion, or rubbing off of the skin, so as to exhibit the fleshy fibres to view. This is very commonly occasioned by an unequal pressure of the harness, particularly the collar (see **COLLAR**) of draught-cattle. The cause, whatever it be, should be done away, and the parts washed with lead-water or alum-water, and dressed with a pledget of cerate of calaminaris. See **CALAMINARIS**.

**EXCREMENT** (from *excerno*, to divide, part, or separate), whatever requires to be discharged out of the body of an animal. See **DUNG**, &c.

**EXCRESCENCE**, any circumscribed protruding substance growing on the skin, or on a bone, and which issues either from a neck, root, or other slender attachment, or, at least, from a point whose superficial dimensions are smaller than those of the tumour itself. When this happens to a bone, it has the name of **Exostosis**, of which the spavin in horses is an instance.

**EXERCISE**, that kind of bodily exertion which animals use spontaneously, according to the share of activity naturally belonging to them; or to which it may be necessary to compel them, for the preservation of their health. Almost all the domestic animals require the stimulus of exercise, but especially those that are distinguished for their fleetness, and of all others the horse. Such of these animals as stand too much at rest, are at the same time full fed, and breathe constantly a hot, foul, stagnated air in close stables, cannot, it is well known, be long preserved in a proper habit of body, or remain fit for active service to their owners. In order that they may perform the labour expected from them with ease and freedom to themselves, and with pleasure to their riders, it is the interest of the latter to attend very particularly to this important article.

There is no veterinary writer who has done greater justice to this interesting subject than Mr. Clark. That writer asserts, that a much greater number of horses which are high fed, and stand inactive in close warm stables, die of diseases arising from the want of regular exercise, than from any other cause whatever.

Horses, he says, are formed for labour: inactivity, however, with full feeding, renders the body dull and sluggish. The stomach is loaded with food, which it cannot properly digest; the food is detained too long in the bowels: hence indigestion, costiveness, and flatulencies. The intestines, in this loaded state, press upon the surrounding viscera, and obstruct

the circulation of the different fluids in them. The liver, mesentery, and spleen, are exposed to be injured from this cause; their natural functions are impeded; the animal economy is disturbed: and, when this is the case, the constitution cannot but be injured, and diseases ensue. The natural secretions are not in due quantity: they, together with the perspiration, are retained in the body, and are absorbed or taken up again into the mass of humours; and hence arises another source of disease. The circulation of blood through the whole system is slow and languid: hence the humours or juices are not properly prepared; glandular obstructions are formed in different organs of the body; the sheath and legs swell; running sores take place in the latter, commonly called **GREASE**; and the whole mass of fluids is greatly disposed to putrefaction: diseases follow, and death frequently concludes the scene.

On the other hand, constant and habitual exercise renders the body strong and active, and, at the same time, fit for the most violent exertions of strength; it assists the heart in promoting a free circulation of the blood and juices through every part of the body; it creates an appetite, and promotes digestion, and thereby greatly assists in converting the food to nourishment; it promotes all the secretions and excretions, which enlivens the body, and gives room for fresh supplies of nourishment; it invigorates the whole system; it gives a flow of spirits, and adds firmness and strength to the muscles and sinews. In short, without a certain proportion of exercise no animal body can enjoy health.

The effects of exercise to horses, however, are not limited to the preservation of their health; but, in many cases of incipient disease, its good effects likewise soon become visible. For instance, when it is used as a medicine in those horses that have swelled legs, &c. from standing idle in the stable: for, although such horses may have been declared full of humours, and that nothing could relieve them from these supposed humours but purging, diuretic, or alterative medicines, yet it has been frequently found, that regular exercise, frequent rubbing of the legs (which is *topical* exercise), with a roomy stall to stretch their legs when they lie down, have removed these complaints without any medicine whatever being administered.

In great towns, rides or covered ways, for exercising horses in all weathers, are extremely useful; and no stable-yard, in a large town,

should be without one ; although, at the same time, the open air is preferable.

From what has been said, it may be inferred, that they should be accustomed to exercise by degrees ; for all sudden changes, whether from idleness to active exercise, or from exercise to idleness, produce considerable changes in the system, and render both the solids and fluids liable to disease. This we experience from our own feelings ; and it is the same with horses on their being first set to hard labour, or violent exercises, although they cannot express their uneasy sensations except by their stiff and contracted steps, which may be observed upon moving them about after a hard day's work. We should accustom them, therefore, gradually and regularly to exercise or labour ; and it then becomes easy to them, nor will any stiffness or difficulty of breathing follow from it. When a horse has arrived at this state or habit of body, he is then said, in the stable phrase, to be in WIND.

But one great source of disease in horses arises from the improper treatment of them after they have been *overheated* by labour. Although a horse be all over wet and smoking with sweat, still ignorant grooms and hostlers will insist, according to their own way of expressing themselves, that he is not heated *at heart*, and will rashly expose him to the cold air uncovered, tied at the stable-door, and even allow him to drink his belly-full of cold water in this condition. Mr. Clark observes, that it would fill a volume to enumerate the cases that have occurred where this treatment has proved fatal to horses. By being exposed to cold air, or drinking cold water, the blood-vessels contract suddenly (for it is the same, in effect, whether cold be applied to the internal organs, as the stomach or lungs, or to the external surface of the body) ; and hence violent inflammation of the lungs or other vital parts, gangrene, &c. and all the well-known diseases that are consequent upon obstructed perspiration. Death indeed is frequently the consequence, or the horse so treated is seized with the most violent acute diseases. To avoid these consequences, we should not only resist the evil practices alluded to, but be careful, in hunting, where it is necessary to ride through rivers or pits, to do it with as much caution as the case will admit. Indeed, every one who has a regard for his horse will, when the animal is in a profuse sweat, if possible, endeavour to shun the entirely, or go to a part where the water is less deep, or to a bridge, although it may be at a considerable distance : for, otherwise, the sud-

den cold will either not only endanger the creature's life, from the most violent acute diseases which will probably occur, or, if he survive the shock, the most obstinate chronic complaints in the chest, legs, and feet, destroy his constitution, and may render him totally useless.

It is to be observed, however, that, like many other things relating to horses, exercise, given for the mere purposes of health, may be carried to excess, and, consequently, may prove rather hurtful than beneficial ; therefore the time and manner of regulating it deserves attention. Thus, it would be imprudent to cause a horse to exert himself too suddenly after he is newly fed and watered, because his stomach is then too full. Horses, in this case, should be made to move slowly and gently at first setting out. They will naturally mend their pace of themselves. Their exercise should be continued in proportion to their strength, manner of feeding, and the labour, &c. required of them ; and this should not only be repeated every day when it is practicable, but increased as circumstances may require. From not attending to the above precautions in exercising horses, how many are the cases of broken wind, and other asthmatic complaints, which have occurred?

It is likewise improper to take out horses to exercise in wet or rain, or when they are not able to bear it, either from former fatigue, from hard labour, or when they are sick or lame.

But still greater caution is necessary to be observed with regard to horses that are very fat. These require a long course of very moderate and regular exercise before they can with safety be put to that which is the least violent. The want of attention to this circumstance frequently occasions sudden death ; many instances of which Mr. Clark says he has known, particularly in horses that have been fed with a great deal of boiled meat, in order to fatten them for sale. Thus, a pair of strong heavy carriage-horses, he says, were once offered him for sale : he declined purchasing them, on account of their extreme fatness ; which was thought a very singular reason. A gentleman in the neighbourhood, however, who was not so scrupulous, purchased them, and they were exercised with the greatest care and attention for a considerable time, in order to bring them into a proper condition for work. After some weeks, they had occasion to travel pretty smartly a very short stage of seven miles out and home, which finished one of them after a short illness.



This, and a variety of similar cases, shew the danger of putting horses that are too fat and full of juices, suddenly, on violent exercise of any kind; for there is no state or habit of body a horse can be in more dangerous, or more liable to disease, than that of his being too fat.

Thus it is evident, that, under proper regulation, the greatest advantages arise to horses from the constant habit of exercise. The effects it produces when carried to excess, as is frequently the case in hunting, and still more in contests on the race-course, where the efforts of the horse are often prodigious, are in some cases curious. It has been observed, in animals that have been hard hunted before they were killed, that, upon taking off the skin, the whole panniculus adiposus, and even the muscular parts, have been found almost black, from the blood being extravasated under the skin, or by the extreme heat of the body, together with the velocity of the circulating fluid; and that the blood has been forced into parts in which it does not commonly circulate. The same appearance, Mr. Clark says, he has observed in horses, particularly one that suddenly fell down dead in a race on coming up to the starting-post the last heat. On taking off his skin, the blood appeared as if it had been extravasated between the flesh and the skin, and ran down in a considerable quantity, as the horse was then hardly cold. It is likewise observed, in cattle that are driven too hard immediately before they are slaughtered, that the blood is too much mixed with the flesh, &c. All these circumstances demonstrate, that, in violent exercises, the blood is forced, by the rapidity of the circulation and extreme heat of the body, out of its natural limits.

To the mischievous effects of extreme and unnatural degrees of exercise, such as are here mentioned, together with those which certainly follow, if, while in this heated state, cold water be thrown upon the body of the horse, or if he be plunged into it, Mr. Clark attributes certain diseases, of which we shall treat under their proper heads, but particularly that called the **FOUNDER**. See that article.

**EXOMPHALOS** (from *εξ* and *ομφαλος*, *a navel*), any protuberance of the navel, but particularly the hernia umbilicalis.

**EXOSTOSIS** (from *εξ* and *οσσειν*, *os*, *a bone*), any excrescence or irregular protuberance of a bone that is not natural, as happens in cases of the **SPAVIN** in horses.

**EXPECTORATION**, that effort to promote a discharge from the lungs which is made by coughing; bringing up phlegm, or

any thing that obstructs the vessels of the lungs.

**EXPIRATION** (from *expiro*, *to breathe out*), is that part of respiration which thrusts the air out of the lungs, and contracts the cavity of the breast. See **RESPIRATION**.

**EXPRESSION**, in pharmacy, the mechanical means made use of for forcing out the juices of succulent herbs and fruits, and the insipid oils of the unctuous seeds and kernels.

The harder substances require to be previously well beaten or ground; but herbs are to be only moderately bruised. The subject is then included in a hair-bag, and pressed between wooden plates, in the common screw-press, as long as any juice runs from it.

The expression of oils is performed nearly in the same manner as that of juices; only here iron plates are substituted for the wooden ones there made use of. The subject is well pounded, and included in a strong canvas-bag, between which and the plates of the press a hair-cloth is interposed.

The insipid oils of all the unctuous seeds are obtained uninjured by this operation, if performed without the use of heat, which, though it greatly promotes the extraction of the oil, at the same time impresses an ungrateful flavour, and increases its disposition to grow rancid.

The oils expressed from aromatic substances generally carry with them a portion of their essential oil; hence the smell and flavour of the expressed oils of nutmegs and mace. They are very rarely found impregnated with any of the other qualities of the subject. Oil of mustard-seed, for instance, is as soft and void of acrimony as that of the almond; the pungency of the mustard remaining entire in the cake left after the expression.

**EXSICCATION**, or **DRYING**, in pharmacy. There are two general methods of exsiccating or drying moist bodies; in the one their humid parts are exhaled by heat, in the other they are imbibed or absorbed by substances whose soft and spongy texture adapts them to that use. Bodies intimately combined with or dissolved in a fluid, as recent vegetables and their juices, require the first; such as are only superficially fixed, as when earthy or indissoluble powders are ground with water, are commodiously separated from it by the second.

Vegetables and their parts are usually exsiccated by the natural warmth of the air; the assistance of a gentle artificial heat may, nevertheless, in general, be not only safely but advantageously had recourse to. By a moderate fire, even the more tender flowers may be dried in a

little time, without any considerable loss either of their odour or lively colour, which would both be greatly injured or destroyed by a more slow exsiccation in the air. Some plants, indeed, particularly those of the acrid kind, as horse-radish, scurvy-grass, and arum, lose their virtues by this process, however carefully performed; but far the greater number retain them unimpaired, and often improved.

The thicker vegetable juices may be exsiccated by the heat of the sun; or, where this is not sufficient, by that of a water-bath, or an oven moderately warm. The thinner juices may be gently boiled till they begin to thicken, and then treated as the foregoing. The juices of some plants, as arum root, briony root, orris root, wild cucumbers, &c. separate, upon standing for some time, into a thick part, which falls to the bottom, and a thin aqueous one, which swims above it; this last is to be poured off, and the first exsiccated by a gentle warmth. Preparations of this kind have been usually called *secule*; that of the cucumber is the only one which practice now retains.

Indissoluble bodies, mixed with water into a thick consistence, may be easily freed from the greatest part of it by dropping them on a chalk-stone, or some powdered chalk pressed into a smooth mass, which readily imbibes their humidity. Where the quantity of fluid is large, as in the edulcoration of precipitates, it may be separated by decantation or filtration.

One of the principal circumstances favouring fermentation is a certain degree of moisture. Exsiccation is therefore employed to dissipate humidity, and render vegetables thereby less liable to those changes produced by a kind of insensible fermentation.

**EXTENSORS.** Those muscles are so called which serve to extend any part. For many examples, see the plates of the muscles of the horse, with their several descriptions.

**EXTENUATION**, signifies a loss of plumpness, or general decay in the muscular flesh of the whole body.

**EXTERIOR**, in an anatomical sense, the outward surface of a body prepared for examination. Our investigations naturally commence when the skin and adipose membrane have been removed; and, in this sense, the *ANATOMY of the HORSE*, as represented in Plate VI. may be called his *exterior anatomy*. Of this figure, taken from the judicious and accurate delineations of the celebrated Mr. STUBBS, the following is a description:

*Muscles, &c. in the Head.*

**AA a** Epicranius, or muscle of the scalp;

**A A** the tendinous expansion that goes to the elevator of the upper lip and wing of the nose; **a** the fleshy part which runs over a part of the orbicular muscle of the eye-lid, and is inserted into the external skin.

**b c d e** The orbicular muscle of the eye-lid; **e** the origin of the fibres from the ligament by which the conjunction of the eye-lids, in the great canthus, is tied to the nasal part of the os unguis.

**f g** The corrugator of the eye-brow; **f** its origin; at **g** it is inserted into the skin.

**h i k l m n o** The elevator of the upper lip and corner of the mouth; **h i** its origin from the epicranium; **l l** that part which is expanded under the dilator of the nostril and mouth; **m** the part which runs over the dilator of the nostril and mouth, and is inserted into the corner of the mouth; **n** the place where it divides for the passage of the dilator of the nostril and mouth; at **o** it arises from the bone near the inner angle of the eye.

**p q** The lateral dilator of the nostril and upper lip.

**r s t u v x** Zygomaticus; **t** its insertion into the orbicularis of the mouth; **v x** its origin from the orbicularis of the eye; this muscle, in action, pulls down the inferior part of the orbicular muscle of the eye, as well as raises the corner of the mouth (and the epicranium raises the superior part of it): it is a very thin muscle.

**z z & B C** The orbicular muscle of the mouth; **B** fibres which intermix with the fibres of the nasal muscles of the upper lip; **C** fibres which run over the glands of the lip towards the insertion of the elevators of the chin.

**1 2** The depressor of the lower lip.

**3 4** Part of the latissimus colli, which at **4** is inserted into the lower jaw-bone.

**5** The elevators of the chin where they are inserted into the skin, the fibres of which are intermixed with the fat of the chin.

**6** The anterior dilator of the nostril.

**7** The tendon of the long nasal muscle of the upper lip.

**8** Septum narium.

**9** The vena angularis, which is a branch of the external-anterior jugular vein here protruding; it runs to the great or internal angle of the orbit, sending branches on each side to the muscles and integuments; it sends out a branch through the lateral cartilages of the nose, which is distributed to the nares, and another which runs down in a winding course to the upper lip.

**10** A branch of the vena temporalis.



- 11 Arteria angularis.  
 12 Branches of the nervus maxillaris inferior; they are branches of the third branch of the fifth pair.

*Muscles of the outer Ear.*

*abbccdee* Retrahens; *cdee* the upper or anterior part of the retrahens seen through the origins; this part is inserted tendinous into the ear, a little below the insertion of its middle part; *bb* the middle part of the retrahens, inserted into the external ear in the middle of its convexity, about one third part of the way from the root of the ear to the tip; *a* the inferior or posterior part of the retrahens, coming from its origin under the middle part to be inserted into the posterior side of the convex part of the ear lower than the medius near the insertion of the lateral depressor *no*.

*cdeedh* The superior-anterior muscle through which is seen the origins; *ee* the place where it joins its fellow, having no origin from the bone; *d* its insertion into the cartilage: *h* a part of it which runs over the cartilage, and is inserted near *h* into the outer ear.

*gi* Muscles that run from the anterior cartilage *k*, to the external ear.

*k* The anterior cartilage of the outer ear.

*l* The lateral muscle of the anterior cartilage of the outer ear; it arises above the orbit of the eye, and is inserted into the anterior cartilage of the outer ear.

*m* A muscle arising under *l*, which is inserted at the inferior angle of the opening of the ear, anteriorly, with *i*.

*no* The lateral depressor of the outer ear, arising at *n*; from the quadratus colli it is inserted, close by the muscle *m*, into the lower angle of the opening of the ear posteriorly.

*p* The outer ear.

*In the Neck.*

*34aabcd* Latissimus colli, or quadratus of the neck; *b* its origin from the sternum, a little below the top; *4* its insertion into the lower jaw-bone; *c* a membranous part going over the jugular vein, from which the fleshy fibres of the lateral depressor of the ear arises; *dd* the edge by which it is attached to that part of the fascia of the superior part of the trapezius which runs over the external surface of the levator humeri proprius.

*fgbhiiklmn* Levator humeri proprius; *g* that part which arises tendinous from the processus mastoideus; *b* the part which arises by thin fleshy fibres from the tendino-membranous part of the trapezius, or sends a membranous

tendon to the ridge of the occiput; *l* the portion which lies under some of the part *fgbhiik*, and arises from the transverse processes of the four uppermost vertebræ of the neck near their extremities; its origin is the same with the angularis called levator scapulæ proprius in the human body; *m* the end near its insertion into the humerus between the biceps and brachii internus. The part *lm* may be called levator humeri proprius; the part *fgbhiik* musculus ad levatorem accessoris, being a distinct muscle till it come to be joined or inserted into the levator humeri proprius, just below the opening where the nerve comes out marked 6.

*opqqrirstuvxxx* The upper part of the trapezius; *op* the origin of the fleshy part; *p* the thickest part; *qq* a part which, in this subject, is thin, but fleshy; the fleshy fibres are inclosed betwixt two fasciæ; the external fascia runs over the levator humeri proprius, and is attached to the edge of the quadratus colli; it sends off a great number of small white tendinous threads which run across or intersect the fibres of the levator humeri proprius, and firmly adhere to it; the internal fascia goes on the internal surface of the levator humeri proprius; *rr* in this line the carnosus fibres end, but are covered, in this subject, by some of the fibres of the membrana carnosæ; *s* a tendinous part; *t* a thin tendinous part, under which may be seen part of the serratus major anticus; *u* the beginning of the tendon of the carnosus fibres marked *ii* of the levator humeri proprius, or a continuation of the tendon of the trapezius; *xxx* the origin of the trapezius from the ligament of the neck.—The fleshy fibres of this muscle run in the same direction, and are joined in with the levator humeri proprius; it is inserted along with part of the levator humeri into the fascia, which covers the extending muscles on the cubit, and into the tendinous surface of the infra spinatus.

*yyz&* The inferior part of the trapezius; *yy* the origin; *&* its insertion; from *z* to *y* it is attached to the latissimus dorsi by white threads of tendinous fibres, which intersect the tendinous and carnosus fibres both of it and the latissimus dorsi, and firmly adhere to both; these tendinous threads run from the continuation of the ligamentum colli towards this lower angle of the muscle, so that it makes a sort of double tendon for the trapezius to lie in at *z*.

*cddv* The jugular vein protuberating.

Upon the neck are seen branches of the cervical nerves, veins, and arteries, which go to the integuments.

*In the Shoulder and Trunk.*

*abcddeefggghiiikllmnnnnnnnnppqrs*  
 Membrana carnosā; *a* the thickest fleshy part; *b* the thick fleshy parts running upon the extensors of the cubit, becomes tendinous at *c*, and goes to be inserted with the latissimus dorsi and teres major into the humerus; *dd* some of the thick fleshy part going over the muscles of the cubit, and tending towards the cubit, forms the membranous tendon *q*, under which may be seen some branches of nerves and blood-vessels which are dispersed in the fleshy pannicle; *ee* the posterior and inferior beginning of the fleshy fibres which arise rather thin, but increase in thickness gradually as they advance towards the part *a*; *f* a fleshy part which runs into the duplicature of this membrane, &c. as it goes towards the thigh; at *gg* it is fleshy, but little more than a membrane, being very thin; *h* a membranous part which runs over the penis; *iii* the tendino-membranous part which runs over the loins, part of the back, and part of the abdomen; *k* the membranous part which helps to form the duplicature; *ll* a faint appearance of the outline of the latissimus dorsi; the part *m* is about as thick as the part *n*, and the latissimus dorsi both together; *nnnnnnnn* the part where the carnosous fibres of the superior portion of this muscle, or fleshy pannicle, begin to arise, which are but very thin, and all tend towards the cubit, some of which disappear at or are inserted into the membranous tendon *q*, and appear again at or arise from the same at *pp*, then running towards the muscles on the cubit become a mere membrane as they pass over the juncture of the elbow, and are so spread over the muscles, &c. below, adhering in some places to the edges of the tendons, and in others to the edges of the ligaments which bind down the muscles to keep them in their proper situations.

*ttuwxyy* Pectoralis; *tt* its origin from the aponeurosis of the external oblique muscle of the abdomen, this part is inserted into the head of the os humeri internally; *x* a part arising from about two thirds of the inferior part of the sternum, which ends in a fascia descending down the muscle, on the inside the cubit; *yy* the part arising from the superior part of the sternum, for about one third of its length, and running in a transverse direction over the inferior part, it is inserted along with the levator humeri proprius, by a flat membranous tendon, into the humerus, betwixt the biceps and brachialis internus.

*z* A large vein which branches in the fleshy part of the membrana-carnosā.

The blood-vessels and nerves marked on the thorax are those distributed to the integuments which are taken off, the nerves come from the nervi dorsales or costales and nervi lumbares, the arteries from the arteriæ intercostales inferiores, and the exterior lumbares, and the veins from the venæ intercostales and venæ lumbares.

& The tail.

*Muscles, &c. in the upper Limb or Extremity, as they appear under the Membrana-carnosā, with its principal Attachments.*

*abb* Extensor carpi radialis; *a* the fleshy part; *b* the tendon, the lower part of which runs under the tendon of the muscle *cc*, which is analogous to the extensors of the thumb, and under a ligament common to it and the extensor communis digitorum *tte*.

*deefgb* Extensor ulnaris & digitorum communis; *d* the fleshy part shewing itself under the membrane *ee*; *fg* the tendon which goes under the ligament at *e*, and giving a slip *f* to the tendon *ii* of the extensor, analogous to the extensor minimi digiti; *h* the tendon, sending fibres laterally over the ligament *m*.

*iii* Extensor minimi digiti, to which the carnosous membrane is attached at *ik*, and sends tendinous fibres over it in the direction as marked.

*n* The bone, which is an imperfect metacarpal bone, to which this membrane is attached.

*o* A sort of spongy fatty substance, probably a production of the membrana adiposa, lying over the protuberating part of this joint, to preserve the bending tendons from bruises when this part touches the ground, &c.

*pq* Flexor carpi ulnaris; at *p* the fleshy fibres appear under the membrane, and also under its own tendinous surface; *q* tendinous fibres going off from this muscle to intermix with the ligaments of this articulation.

*Rr* Flexor digitorum profundus; *R* the fleshy part appearing under the tendinous surface of this muscle, as well as the carnosous membrane.

*s* The tendon of the sublimis.

*Ttt* The inter-muscular ligament to the part of which the carnosous membrane has some adhesion.

*u* Marks the ligaments arising at *u* from the orbicular bone, and running obliquely downwards and forwards.

*vv* Ligamentous fibres which come from the inside of the radius, and run over the bending tendons to be inserted into the bone *n*, and join in with the carnosous membrane.



x Vena plantaris externa.

y Nervus plantaris externus.

z A small nerve coming from under the ligaments on the other side the carpus, and descending in an oblique manner to join the nervus plantaris externus.

The carnos membrane joins in with the membranous expansion which is sent down the cubit by part of the pectoralis, and, with other membranous productions from the ligaments, forms a sort of ligament, inclosing the tendons of the extending muscles, and confines them in their proper places. This ligament is inserted into the upper part of the first bone of the finger.

The ligament arising at *u* runs down to join the tendon *i* a little below *f*, running over the tendon *i* till it comes to its insertion near the edge of that tendon next the tendon *f*; the part *ufw* sends the principal part under the tendon *efg* to be inserted into the metacarpal bone at *bf*; the part which runs over that tendon, or those tendons, joins in with the membranous production of the pectoral muscle and carnos membrane.

§ The hoof.

*In the lower or posterior Limb.*

*abcdefghijklmnopqrstuvwxy* § Fascia lata, and musculus fasciæ latæ, with the membrana carnosæ, and expansions of the muscles; *a* the part which is a continuation of the tendon of the latissimus dorsi, which arises free from the muscle glutæus medius, which lies under it; *b* the origin of the musculus fasciæ latæ from the spine of the ilium.

*c* The anterior fleshy part; *d* the posterior fleshy part; *e* the tendon.

*f* The part under which the glutæus externus lies, and from which it has a fleshy origin; this part is much thicker or stronger than the part *a*.

*ghi* The part under which the biceps tibiæ lies; this muscle in its superior part arises from the fascia lata.

*k* The semi-tendinosus lying under the said fascia, from which it also arises in the superior part.

*K* The patella, with its external lateral ligament, which binds it to the os femoris, and its inferior anterior ligament, which binds it to the tibia, protuberating under the fasciæ.

*l* The extensor longus digitorum; *m* peroneus; *n* flexor digitorum pedis; *o* Gemellus.

*p* Tendons formed by these fasciæ and expansions to join in with the extensors of the tarsus.

*q* Nerves expanded upon these fasciæ, or sent off to the external parts, as the adipose membrane and cutis. They are branches of the sciatic nerve.

*r* A sort of tendon formed by the fasciæ, &c. which may probably assist the extensor digitorum when the tarsus is extended.

*s* The tendon of the extensor digiti.

*t* The tendons of the flexors.

*u* The interosseus, &c.

*uv* Veins arising from under the hoof, called venæ plantares; they run into the vena tibialis posterior.

*x* Nervus plantaris externus.

*y* A ligament sent off by the interosseus, &c. and the capsula of the fetlock joint, to join and bind down the tendon of the extensor digitorum pedis.

About *z* these fasciæ have an attachment as they pass over the tendon and ligaments.

§ A sort of spongy fatty substance, probably a production of the membrana adiposa, lying over the protuberating part of this joint, to preserve the bending tendons from bruises when the fetlock touches the ground.

The fascial membrano-tendinous expansions, &c. cover all these muscles, ligaments, blood-vessels, nerves, &c. forming a pretty strong coat over them; the muscles, &c. only making their appearance by protuberating under them, which they will do even when they are covered by the external skin.

A The hoof.

*Muscles, &c. protuberating under the Membrana Carnosa in the left upper Limb, viz. on the Cubit, Carpus, Metacarpus, and Extremity of the Limb.*

*ab* Extensor carpi radialis; *a* the fleshy part; *b* the tendon.

*c* The tendon of the muscle which is analogous to the extensor of the thumb.

*d* Biceps cubiti.

*e* Pectoralis.

*f* Flexor digitorum.

*g* Flexor carpi radialis.

*h* Sublimis.

*i* Profundus.

*k* The tendon of the extensor ulnaris & digitorum communis.

*l* A sort of spongy fatty substance, probably a production of the membrana adiposa.

*m* Vena cephalica.

*n* Vena plantaris interna.

*o* Nervus plantaris internus.

*p* Interosseus, &c.





Exterior Anatomy of the Horse.











*g* A ligament coming from the interosseus, and inserted into the extending tendon.  
*r* The hoof.

*Muscles, &c. in the internal View of the left lower Limb, as they appear through or protuberate under the Fascias which cover them.*

*a* The fleshy part of the tibialis anticus.  
*b* The fleshy part of the sartorius.  
*c* The tendon of the extensor digitorum pedis.  
*d* A ligament coming from the interosseus, and joining with the tendon of the extensor digitorum pedis.  
*e* The interosseus, &c. arising from the upper part of the metatarsal bones and some of the tarsal bones, and is inserted into the sesamoid bones and first bone of the toe on each side, and sends off the part *d* to the tendon of the extensor digitorum pedis.

*ff* The tendon of the plantaris.  
*g* A tendon formed by the semi-tendinosus, biceps cruris, &c. to go to the heel.

Between *f* *g* and *h* are formed, by the expansions of the muscles on the inside of the thigh, two or three flat tendons, like those marked *p* on the external side of the leg in this table.

The direction of the tendinous fibres of the fascia are here marked as they run over the inside of the leg, &c.; about *h* they are pretty strong (under which the vena saphæna is scarcely discernable), forming a strong tendinous fascia, which joins in with the tendon of the extensor digitorum pedis at *k*.

*l* A sort of fatty, spongy, glandular substance, lying immediately under the skin, probably a production of the membrana adiposa, lying over the protuberating part of this joint, to preserve the bending tendons from bruises when the fetlock touches the ground.

*m* Vena saphæna.  
*n* Branches of the vena saphæna.  
*o* Vena plantaris interna, or a continuation of the vena saphæna.  
*p* Nervus plantaris internus.  
*q* A branch of the nervus cruralis.  
*r* The hoof.

The epithet *exterior* is no less applicable to the natural outline of the living animal. As far as the subject concerns the veterinary practitioner and amateur, it is considered under the articles ACTION, PROPORTIONS, &c.

EXTERNAL INJURIES, happening to cattle of different denominations, are cuts, wounds, or bruises (see those articles). Mr. DENNY observes, that horses at large, or con-

finied in stables, are very liable either to hurt themselves, or be injured by other animals; and in proportion to the violence of these accidents will be the subsequent inflammation and swelling.

If the accident, when discovered, appears likely to prove of consequence, he suggests that bleeding may be proper; but in all slight cases local remedies only are requisite. Of this kind are the application of lead-water, or a poultice of bran and vinegar warm.

If the injury be on the extremities, bandages may be applied, and kept constantly moist with lead-water or vinegar; or the part may be bathed with camphorated spirits.

In case any indolent swellings remain, as is frequently the case after violence done to the knee, hock, &c. a blister will be found the most useful application. The horse should have gentle walking exercise daily, as soon as he is sufficiently recovered.

Where the inflammation, however, has been so considerable as to occasion the formation of matter, poultices and warm fomentations are to be used, and continued till the abscess is in a fit state to have the matter discharged; when a large incision must be made with a lancet in the most depending part, and the wound afterwards dressed with digestive ointment spread upon tow.

EXTRACT, in pharmacy, a solution of the purer parts of a mixed body inspissated by evaporation nearly to the consistence of stiff honey. See EXTRACTION.

EXTRACT OF LEAD. Mr. Goulard, a surgeon of Montpellier, wrote a treatise some years ago professedly on the external use of lead, which has been the means of greatly extending the use of it. The basis of his preparations is what he calls the extract of lead, which is a solution of litharge in strong vinegar, by boiling it gently to the consistence of a thin syrup, and, after it has stood to settle, the clear part is poured off for use. A small portion of this, diluted in a large quantity of soft water, makes his vegeto-mineral water, which is employed as a lotion, or, boiled with bread or bran, makes a cataplasm. The extract is likewise combined with unctuous matters into a variety of forms. These preparations have been found of great utility in various cases of inflammation. Their application has, however, been observed to produce many of those affections of the nervous system which characterise the poisonous effects of lead taken internally in the human subject.

We have no less reason, therefore, to be cautious lest the too free use of it, in veterinary.



practice, occasion similar evils to the animals whose diseases it is intended to alleviate. There is no doubt but solutions of vitriolated zinc, of alum, &c. will answer as well; and these may be safely used to any extent.

**EXTRACTION**, in the largest sense, signifies any solution made by menstrooms, unless there be allowed this difference between them; that in solution the menstrooms absorb the whole substance of the body, but in this they carry off only certain particles of it. Camphor is dissolved in spirit of wine, but jalap is more properly said to be extracted; for the resin only is taken out by the menstruum, the other particles being left untouched. But extraction most commonly signifies such an inspissation, or thickening of a solution, as, when there is drawn off a certain quantity of the menstruum, reduces the remaining mixture to the consistency of honey; as in the extracts of saffron, gentian, and the like. Extracts are chiefly made out of vegetables, and require different menstrooms, according to the different nature of the plants, especially in gums: for such as are mucilaginous, as gum arabic, tragacanth, &c. are not easily to be dissolved but in aqueous liquors; whereas, on the other hand, resinous gums, as galbanum, scammony, &c. must have ardent spirits to dissolve them. There are others again of a middle nature, which may be dissolved in either sort of menstrooms, though not so easily in one as in the other. Thus, aloes and rhubarb, which are something resinous, are better made into extracts with spirits of wine than water; but plants, which abound less with resin, such as hellebore, &c. are more commodiously extracted with water. To perform, therefore, extraction aright, a proper menstruum is necessary, and one which is as near a-kin as possible to the body to be extracted. Thus extraction is usually performed: but its use does not seem to be of so great service in physic as is generally imagined; for much of the more subtle parts flies away, either when the menstruum is drawn off by distillation, or when it evaporates in the open air. So that, if those particles are any ways useful in medicine, it is to no purpose to seek for them in extracts. It is also of service to clear some gums and resins from dross; for as the taking up the genuine substance by a proper menstruum leaves all that is not so behind, so, by evaporating the menstruum again, the resin, or whatsoever of that nature it is, will be recovered in its utmost purity.

**EXTRACTION**, in surgery, denotes the drawing from or out of the body any thing that is offensive.

**EXTRANEIOUS**, any foreign substance, as a thorn in the flesh. It is also used to express the same as external, and frequently signifies the same as excrescence; something that is not natural to the substance it grows out of, or does not properly belong to the part to which it adheres.

**EXTRAVASATED** (from *extra*, out of, and *vas*, a vessel), any thing that is got out of its proper vessel.

**EXTRAVASATION**, is applied to any of the fluids in the body which are out of their proper vessels. Thus, an *ECCHYMOsis*, fugillation, or aneurism, may be called *extravasations*.

**EXULCERATION**, the same as ulcer; but generally used to express those beginning crochions which wear away the substance, and form an ulcer; or when an excoriation begins to suppurate.

**EYE**, the organ of vision, through the means of which objects are represented to the mind. The eye is retained in the cavity termed the *ORBIT* by a variety of appendages, all essential to its welfare and economy. Whoever is acquainted with the structure of this part of the productions of nature cannot fail infinitely to admire the exquisite wisdom and beauty of its mechanism. We shall, in the first instance, consider the external parts of the eye of the horse.

The eye-lids are composed of a mixture of membranous and cartilaginous substances, and these terminate on their edges in a firm cartilaginous body, called *TARSUS*. The tarsus is extremely vascular, and its vessels are attached to what are denominated the *ciliary ducts*, secreting a fluid for the purpose of moistening and lubricating the surfaces of the tarfi, and thereby preventing such consequences as otherwise constant friction would be apt to produce. When the tarfi become diseased, matter or pus is discharged, instead of the usual healthy liquor: in this state, excoriations of the neighbouring parts, and temporary adhesions of the eye-lids, may be expected. Two muscles, the *elevator palpebre* and the *orbicularis*, perform the offices of opening and closing the eye-lids. The eye-lids of the horse are not so plentifully furnished with hair, termed the *lashes*, as those of the human subject; they are few and scattered, yet they fully serve to protect the eye from insects or other extraneous particles. The internal part of the eye-lids is covered by a thin, fine, vascular membrane, the *tunica conjunctiva*. This coat is reflected over the whole of the front of the ocular globe; here it ceases to be vascular almost entirely, and acquires a high degree of

transparency, particularly in the centre of the eye. This transparency, however, is diminished or destroyed when the conjunctiva is diseased. As the tears contain a considerable portion of salt, they would be constantly producing irritation on the tunica conjunctiva, did not this membrane secrete a mucus to defend it from such an effect.

The lachrymal gland is situated at the outer corner and superior part of the eye. It has five, and sometimes six, excretory ducts, which convey the tears over the surface of the eye, by the *puncta lachrymalia*; they enter the *ductus ad nasum*, and are thence carried to the nose. The *puncta lachrymalia* of the horse's eye are much larger in proportion than they are found in the human subject. The horse has no lachrymal sac; and the ductus ad nasum is ossaceous as far as the tubernated bones, where it becomes membranous, and terminates near the extremity of the nostril. The tears are designed to preserve the transparency of the eye, to wash off extraneous matter, and to prevent any ill consequences from the friction between the cornea and the palpebræ. The lachrymal gland of the horse differs from that of the human subject, in not possessing a voluntary power, or being subject to the emotions of the mind. In the human eye, the lachrymal gland is frequently diseased; it may have its action morbidly increased, as in the *epiphora*, or watery eye: this seldom occurs with the horse; when it does take place, however, it is occasioned by inflammation. Whenever the nasal duct is obstructed, the disease may be removed by the introduction of a bougie: this it will readily admit. Injections of tepid water may be occasionally used with much propriety.

At the inner corner of the eye of the horse is placed a cartilaginous body, no resemblance to which is to be met with in the human subject. This is the *membrana nictitans*, vulgarly called the HAW. In the eyes of many birds we find a similar appendage, and what may with more accuracy be denominated a *membrane*, for it is really so; whereas, in the horse, this part is entirely composed of *cartilage*. Birds have a muscle for the sole use of directing the motions of this substance, horses have none. Whenever the eye is inflamed, it is drawn into the orbit by the *retractor* muscle; and the haw, being prevented from accompanying it by the bones of the orbit, seems to pass over about one half of the surface. If, by any motion of the eye, it be drawn to the internal corner, the *membrana nictitans* will have the appearance of covering the whole. This membrane was

at one time universally, and is now often considered by farriers, a sort of disease of the eye. Such a supposition, however, is grossly erroneous: whenever the haw makes its appearance, it is merely an effort of nature to exclude the irritating powers of light; and therefore the practice of removing it, once so general, was injudicious and hurtful.

The eye is composed of three coats and three humours: some veterinarians acknowledge the existence of four coats, by the cornea forming two, the transparent and the opaque, which may be separated by maceration. The transparent cornea of the horse is large in proportion to that of the human subject: this circumstance endues him with a superiority of vision in the night. On removing the transparent cornea, the aqueous humour escapes, and the *iris* appears. The iris is a muscular curtain of an annular figure, having a hole in the middle, termed the *pupil*, and dividing the anterior part of the globe of the eye into two chambers: these are occupied by the aqueous humour. In the greyhound the muscular fibres of the iris may be plainly demonstrated. The pupil in the human eye appears black; but in the horse's eye it is of a blueish cast. The aqueous humour gives a convexity to the eye, refracts the rays of light, and enables the pupil to perform its office. The pupil of the horse is horizontal (see Plate I.), of some other animals perpendicular, of the human it is circular. The *membrana pupillaris* covers the pupil during the fœtal state, and is absorbed before birth, at about the sixth or seventh month. It receives the blood-vessels from the iris and the anterior part of the crystalline lens, the growth of which it appears to promote, the lens not increasing much after birth. The iris regulates the quantity of light that should pass through the pupil; and, when the former contracts, the latter is enlarged, and *vice versa*. A peculiarity in the eye of the horse is, his having several small, black, glandular bodies; the office usually ascribed to which is, their more effectually excluding the admission of light. Perhaps they are possessed of other qualifications of which we are at present ignorant.

On removing the iris, the second humour, viz. the *crystalline lens*, makes its appearance. This is retained in its situation by a coat called its capsule, between which and the lens a quantity of fluid has been discovered, termed by anatomists the *liquor Morgagni* (from the anatomist who first made the discovery), and supposed to be intended to prevent an immediate contact of the parts. The crystalline lens, in health, is



transparent: its structure is such that the outer parts are soft, and become more and more firm as we approach towards the centre. Many anatomists have entertained doubts whether the crystalline lens be an organized body: some have considered it as destitute of both blood-vessels and nerves; possessing no apparent sensibility, they have fancied it wanting in the latter; but the pain attending it in disease furnishes no small argument in favour of a contrary opinion; and that it is also furnished with vessels capable of conveying red blood has been repeatedly demonstrated by injection.

The use of the crystalline lens is to afford, by the refraction of light, a focal point on the retina. To produce perfect vision, this point must vary; a change easily accomplished, whatever be the distance of the object, when the eye is in a state of health. This depends on the power of the lens, which, when removed from the human eye, has its functions supplied by the aid of glasses. When an object is viewed at a distance, a contraction ensues in the pupil, and, the rays of light passing through the centre of the lens, the focal distance is lengthened. By the powers of the iris we are enabled to accommodate ourselves to objects of various distances and dimensions.

The *ciliary processes* are a continuation of the *choroid* coat. In order to embrace the crystalline lens, they are thrown into plaits or folds. Their use is to oblige all the rays of light to pass immediately through the lens. Some animals, as fish, have no ciliary processes.

The third humour of the eye is the *vitreous*. This fluid is not contained in one general bag or chamber, but in numerous minute cells, resembling those of the orange, and of an admirable transparency. This humour is of the consistence and appearance of the purest water.

The vitreous humour serves to produce a small degree of refraction in the rays of light, and occupies and distends the posterior part of the globe of the eye.

The *caruncula lacrymalis* of the horse differs from that of the human subject, it being much less vascular. Its situation lies between the two puncta: it is vascular only where it comes in contact with the tears, which it directs into the puncta. It is partially covered by the conjunctiva.

We have already observed that there are three coats in the formation of the eye: the first of these is the opaque cornea or sclerotica. In horses the concealed part of the globe of the eye is covered by the opaque cornea: it is here very firm and dense in structure, and assists in the

protection and formation of the organ of vision. From its usual appearance we imagine it is not endowed with many nerves, or any considerable vascularity.

The next coat lines the concave part of the opaque cornea, but does not continue over the transparent portion. It is called the *choroid*, and is a particularly fine vascular and sensible membrane. The arteries from which it is supplied are the two ciliary. It is constantly secreting a matter which, in the living state, has a membranous appearance, but after death it approaches to a mucous consistence. This secretion, in the human eye, is black, and is called the *nigrum pigmentum*. In horses, this lines the whole of the iris, the ciliary processes, and the junction between the sclerotica and the choroid coat. The external part of the choroid, that which is expanded over the retina, is not covered by the pigmentum, but by a variegated substance. The superior part of the choroid coat in several animals has this appearance. On minute examination, we find it difficult to determine whether the pupil of the horse has the most affinity to a grey or green colour, it approaching considerably to each.

The eyes of some animals, as ferrets, rabbits, &c. have no pigmentum; and the choroid coat of fishes resembles silver.

The use of the *pigmentum nigrum* is to absorb light; all black substances having this power. The variegated coat does not seem to be produced by the choroid, to which, however, it is connected by cellular membrane.

The third coat is the *retina*: this is a beautifully delicate expansion of the optic nerve over the surface of the choroid coat. The whole of the vitreous humour may be said to be in contact with the retina. The optic or central artery supplies the retina with blood, and is minutely distributed throughout the substance of it.

Light is always more or less refracted, according to the density of the medium through which it passes. The eyes of all animals differ in the degree of the convexity of the cornea; but, as this coat is a firm medium, it produces considerable refraction. The human eye is much more convex than the eye of the horse, and the latter cannot, therefore, behold objects at so short a focal distance. When a deficiency of vision takes place in youth, from too great a convexity of the cornea, the inconvenience will diminish by age.

Light proceeds through the cornea into the aqueous humour; here it experiences some little refraction: thence it passes through the

more fluid part of the lens into its centre, where it becomes a focal point: it afterwards gradually diverges until it has terminated on the retina. It is one of the curious phenomena of vision, that objects are represented on the retina in a state of inversion: some, indeed, have thought that they were presented to the mind also in this situation; but this supposition seems highly improbable. The reason why horses and other quadrupeds have more extensive visionary powers than man during the night is, their being endued with a greater proportion of transparent cornea; and to this superiority, with regard to the horse, the variegated coat very much contributes. When we recollect that no such thing exists in nature as positive darkness, and that the state which, to our senses, may appear to approach nearest to this contains numerous, though perhaps obscure, rays of light, we may easily conceive, that the larger the surface of admission for these rays, the more complete will be the optical organ. Besides, the pupil of the horse is less limited in its functions and powers, and the crystalline lens is proportionably larger, than in the human subject.

The *diseases of the eye of the horse*, though not very numerous, are by no means easily removed. Their usual situations are the tunica conjunctiva and the transparent cornea. Inflammation very frequently makes a sudden attack on these parts, attended with a partial and violent determination of blood, an overflowing of the tears, and protrusion of the membrana nictitans: the light produces an irritating and painful sensation. This state of disease is occasionally *periodical*, and it is then vulgarly termed *MOONBLINDNESS*.

We shall here give an account of these diseases, and their treatment, as described by Mr. FERON, in his veterinary work recently published.

1. *OPHTHALMIA, or Inflammation of the tunica conjunctiva.* This begins in the most vascular part of the conjunctiva, then extends to that portion covering the sclerotic coat, and from thence proceeds to the transparent cornea.

When this is the case, the animal's eye-lids drop, the tears run plentifully over the cheeks, and still more pass through the nasal duct, where drops of fluid may be seen at its extremity, which never are seen in the healthy state of the eye; the haw is thrown over the eye, in order to prevent the admission of the rays of light, which, in this state of the eye, would irritate it, and increase the disease. It is not un-

usual, however, to find the eye that was to-day very much diseased and inflamed, quite clear in the course of the next day. This phenomenon is owing to the power of restoration being in the horse so great in comparison to what it is in the human subject.

Mr. Feron justly observes, that this disease is never found in unbroken horses, but always in those that are domesticated. It is neither found in colts nor in old horses, but takes place at the age of between five and six. The reason, he thinks, is, that, at a period when the animal has ceased to grow, and may be said to have arrived at maturity, he is much more subject to plethora, and consequently to inflammatory diseases, than at any other period.

The great cause of ophthalmia in horses is the change of temperature to which they are exposed; not to mention the air they breathe, vitiated by their dung and urine fermenting in the stable. Hence it is that we find more horses with diseased eyes in London than in any part of the country (the cavalry excepted). Unequal exercise also contributes to produce this and almost all other inflammatory diseases; for it is very frequent to see horses exercised and ridden very violently one day, and suffered for a whole week afterwards to remain at rest.

"We are not," says Mr. Feron, "to consider this complaint as local; for, when it is so, it is much easier of cure; but constitutional, and therefore also requiring constitutional remedies and treatment; but, unfortunately, we have not yet discovered a specific of this nature. The animal seldom perspires in this disease; and, if he does, it is in excess, which shows that the constitution is affected; and there is also a slow lingering fever. If he is bled, purged, &c. the eye first affected soon becomes clear; but, at the end of five or six weeks, the other eye becomes inflamed: this gets also clear; and, about the same period afterwards, the eye that was originally inflamed now again becomes affected, and so on periodically, till the patient is totally blind in one of them. The degree of inflammation is very various; sometimes it is so great that the iris becomes affected, and a little deposit of lymph may be observed at its edge, and also at the edges of the little glandular bodies. This does not take place in the human subject; for, though the iris is contracted, it is in consequence of sympathizing with the retina to prevent the admission of the rays of light. This deposit of lymph is most commonly at the inner angle of the iris, and at the edge of the supe-



rior glandular bodies, and it is a sure indication of a succeeding cataract and blindness; and, as it is a deposition on the iris, it is very difficult to get rid of. The cornea is sometimes as red as if it had been washed with venous blood, and neither the iris nor the pupil can at all be seen.

“ It frequently happens that the iris appears of a yellow colour: this, however, does not indicate any disease in it, but shows an incipient disease of the cornea, which now receives more serum into its vessels than they can make transparent, because they are too much distended and enlarged to produce that effect; just as any coloured fluid will not appear transparent if contained in a glass tube of an increased diameter. These circumstances will also apply to the disease going off, as well as in its incipient state.”

Mr. Feron's idea, that “ this disease may be considered as a gouty inflammation of the eyes, peculiar to the horse,” appears to us somewhat speculative, since it seems to resemble the gout merely in being a *periodical* disease. It is not, he insists, of the same specific character in diseases that affect the eye of man, of the ox, the sheep, or even the ass, which so much resembles the horse in other things. “ In a number of cases, the inflammation is periodical, and blindness is sure to ensue, though not always in both eyes; for, when one eye becomes blind, the other frequently remains well: and therefore farriers employ the cruel mode of taking out one eye to save the other, which is sometimes attended with success, by the inflammation that is produced acting in the same way that a rowel or seton would do.”

The various methods employed at the VETERINARY COLLEGE, to obviate the effects of inflammation of the eyes in horses, are briefly these:

The professor has begun with bleeding from the jugular or angular veins; at the same time employing purgatives frequently repeated, as well as diuretics administered alternately with the former. After these he has tried all the medicines employed in ophthalmia of the human subject by Messrs. Wathen and Phipps, but without any degree of permanent success. The local and surgical treatment has been as follows, viz.

1st. He has ordered scarifications to be made; and a seton to be passed through the membrana conjunctiva.

2dly. Some of the larger vessels going to the cornea have been removed and divided with the actual cautery.

3dly. Leeches have been applied to the conjunctiva. None of these, however, have been attended with good effect.

4thly. Both the carotid arteries have been taken up; but even this was of no avail, since the anastomosis, which the vertebral arteries form with the carotids, prevented the intention.

It results therefore, that the treatment of ophthalmia in the horse is confined entirely to bleeding, purging, and diuretics; fomentations of warm water, in order to diminish the irritation from the tears that run over the cheeks; wholesome diet, and moderate but continual exercise, to increase perspiration.

2. *The Cataract*.—“ The most common and general termination of this specific ophthalmia,” Mr. Feron observes, “ is in a cataract. This is nothing more than an opacity of the crystalline lens, which was before transparent; it generally becomes of a white or yellow colour, &c. and inclining to white in the circumference: sometimes the capsule of the lens becomes thickened, and even bony, &c.; an example of this kind is kept in the museum of the Veterinary College.”

“ At other times, the lens escapes from its capsule, and adheres to the iris, which comes in contact with the cornea; the vitreous humour becomes absorbed, and the posterior part of the eye filled with lymph, the size of the eye being diminished. But if there is no lymph thrown out, then the cavity of the vitreous humour remains, and a septum is formed between it and the lens.

“ When the lens or crystalline humour gets loose out of its capsule, if it does not adhere to the iris, it rolls about the eye like a marble, and produces absorption of the vitreous humour, retina, &c.

“ In the human subject an operation is performed for *extracting the cataract*, which is generally successful in giving sight to the patient: but in the horse it is useless, and should never be recommended; because the important functions of the crystalline lens must be supplied by two different sorts of glasses, convex to see near objects, and concave to see distant ones. Now it is utterly impossible to employ these so as to be of advantage to the horse; and without them vision is so confused for want of the lens, that it is much better to have the animal quite blind; for he would be continually stumbling and starting, and of course of little value to the owner. The only advantage of extracting a cataract to a horse would be when the animal is turned into the field to graze. But, beside the objection before mentioned, there are still

more ; for the operation is very difficult to be performed, from the retractor muscle drawing the globe into the orbit so much that we cannot get at the cornea ; besides, this part is naturally much less convex than the cornea of the human subject."

Mr. Feron, however, was enabled to perform the operation, by counteracting the action of the retractor muscle, with the assistance of a double tenaculum, which, he says, is much better than any speculum. Still the event was without success ; for, after the operation, the retractor muscle continued to draw the globe into the orbit, and the eye of course appeared less than its fellow ; and the aqueous humour continually escaping, prevented the union of the divided cornea, which, from the irritation produced, inflamed, as well as the iris and all the other parts, and the bulk of the eye became very considerably diminished. The iris sometimes getting between the divided parts of the cornea prevents the escape of the aqueous humour, and the wound heals. In case of a disagreeable white cataract, or if there is lymph between the crystalline and vitreous humours, we may, in this case, remove or extract the lens.

3. *Matter formed by the iris* is another, and not unfrequent, disease of the horse's eyes. In this case the purulent fluid gravitates to the depending part of the anterior chamber of the eye, and has a semicircular appearance, on account of the figure of the cornea, the pupil being always contracted. If this matter is not soon removed, it will, by pressing on the cornea and iris, produce blindness : we ought, therefore, as soon as it is perceived, to puncture the edge of the cornea, just below the matter, with the point of a lancet, so as to allow of its escape. This appearance is almost always the forerunner of a cataract.

4. *Gutta Serena*.—This disease is vulgarly called "*glass-eyes*" by farriers, because the eyes, far from being dull or disfigured, generally appear very clear and glassy. It is a much more frequent affection of the human eye than of that of the horse. The pupil is very much enlarged and dilated, in consequence of the total loss of sensibility in the retina and optic nerve ; which being no longer capable of stimulating it to action, the muscular fibres contract from the centre towards the circumference, enlarging the aperture as when the perfect eye is exerting its powers to view objects in the dark. The gutta serena is supposed generally to arise from an affection of that portion of the brain immediately connected with the optic nerve ; but it

is more likely that the deficiency is confined to the nerve itself. Some diseases of the brain, as the staggers, or a blow on the head, will produce it. When proceeding from any of these causes, we may attempt the cure by bleeding, purging, blistering the top of the head, and stimulating the nostrils (Mr. Feron says) with the vapour of vitriolic or marine acid.

5. *Watery Eyes*.—This complaint, as its name indicates, proceeds from an increased secretion of tears, which flow down the cheeks, in consequence of the lachrymal ducts not being capable of carrying all the superfluous quantity away ; or it may arise from an obstruction of the nasal duct.

We cannot agree with Mr. Feron as to the cure of watery eyes ; which, he says, consists in "diminishing the increased secretion of tears by judicious *bleeding and diuretics*," accompanied with continual and moderate exercise. The complaint, in the first place, is rather an inconvenience than a disease ; and, probably, the most frequent, if not the only, cause of it may be traced to the volatile fumes, so hurtful in other respects to horses that are kept in close stables. If the secretions from the lachrymal glands become inordinate, either from this cause, or from mere debility, which may render them too obedient to common stimuli, bracing and sedative collyria, such as those prepared with saturnine or other metallic salts, seem to promise the greatest advantage, without having recourse to means calculated to act on the system. But, when the watery eye is found to proceed from an obstruction of the ductus ad nasum, "the passage must be opened by injecting a decoction of linseed, or any other glutinous injection : if this fail, the ductus ad nasum must be opened with an instrument, introduced with great dexterity from the eye down to the nose."

6. *External Injuries of the Eye*.—An inflammation produced by wounds or contusions of the eye-lid may extend to the eye itself ; though few such accidents will occasion a loss of sight, if properly treated. In such cases there is often a complete opacity for a time ; but, on removing the inflammation, the cornea generally recovers its transparency. In violent accidents, indeed, where wounds have extensively divided the coats of the eye, or where the eye has been ruptured by a contusion, vision, of course, is completely and irretrievably destroyed.

Mr. Denny advises us, whether the inflammation arise in consequence of injuries to the eye itself, or to the eye-lids only, to observe the following treatment.



## E Y E

Take away four or five pints of blood from the neck-vein, and apply the following poultice to the eye:

Take of Bread, finely grated, a handful;  
 Lead-water, enough to make it of a proper consistence; add  
 Olive oil, one ounce.  
 Mix them.

Apply it cold; renew it several times daily; and give the following ball, with mashes of bran and warm water:

Take of Barbadoes aloes, one ounce;  
 Ginger, in powder, two drachms:  
 Form them into a ball with treacle.

A low diet being required, hay and corn must be sparingly allowed. If the inflammation does not subside by the third or fourth day, a rowel put under the jaw, and continued till the disease be removed, is a suitable remedy.

## E Y E

After the above ball has operated, Mr. Denny directs the following fever-ball to be given morning and night:

Take of Antimonial powder, one scruple;  
 Nitre, in powder, six drachms;  
 Aniseeds, half an ounce;  
 Treacle, sufficient to form the ball.

It is not uncommon, he observes, for small specks to remain on the cornea after the inflammation is removed. "In such cases, the best application is a few drops of the tincture of opium, on lint, introduced between the eyelids once or twice in the day. This stimulates the lymphatics to absorb the lymph; which, being diffused between the coats of the eye, occasions imperfect vision."

These observations on the treatment of diseases of the eye in the horse, apply, with slight variation, to the same affections in other domestic animals.

## F.

### F A C

**F.** at the end of a prescription, signifies *fiat*, *let it be*; as *f. bolus*. Veterinary prescriptions, however, are never written in Latin, as no interference is to be apprehended from the patient's curiosity or caprice; which seems to constitute the only reason why physicians prescribe in that language.

**FACULTY**, a power or ability to perform any action. Writers mention three, viz. natural, vital, and animal. By the first they understand that by which the body is nourished and augmented, or another like it generated; which some farther divide into three, nutrition, growth, and generation; and the first of these has also by some been divided into attractive, retentive, concoctive and expulsive: but these are terms that rather puzzle than instruct, as they convey no distinct signification. The vital faculty is that by which life is preserved, and the ordinary functions of the body performed; and the animal faculty is what conducts the operations of the mind, as the imagination, memory, &c.

### F A L

**FÆCES**, the animal excrements; but often this term is made use of to express the ingredients and settlings after distillation and infusion.

**FÆCULÆ**, the dregs which subside in vegetable juices, as in that of the roots of briony; but these are not used so much in medicine as formerly.

**FAGOPYRUM**, buck-wheat, or brank, a species of Polygonum.

**FAINTING**, or **SYNCOPE**. See **SYNCOPE**.

**FALCADE**, in the manege. A horse makes falcades when he throws himself upon his haunches two or three times, as in very quick curvets, which is done in forming a stop and half stop. A falcade, therefore, is the action of the haunches and of the legs, which bend very low, as in curvets, when we make a stop or half-stop.

**FALCIFORM PROCESS**, the dura-matral process, called also the *Falx*.

**FALLING-SICKNESS**. See **EPILEPSY**.

**FALLOPIAN TUBES**, so called from FALLOPIUS, the anatomist, who first discovered their connection with the uterus in female animals. See UTERUS and CONCEPTION.

**FALSE GALLOP**, in the manege. See the articles GALLOP and GALLOMADE.

**FALSE QUARTER**, a cleft or chink in the quarter of the hoof of a horse, from top to bottom. It happens generally on the inside, that being the weakest and the thinnest; and proceeds from the dryness of the hoof, but especially when a horse is ridden in dry, sandy, or stony grounds in hot weather; or, in frosty weather, when the roads are flinty and hard. It is likewise caused by bad shoeing, and all the other accidents whereby a horse becomes hoof-bound; for the narrowness of the heels, and brittleness of the quarters, continually expose a horse to all such accidents. A false quarter is both dangerous and painful: for, as often as a horse sets his foot on the ground, the chink widens; and, when he lifts it up, the sharp edges of the divided hoof wound the tender flesh that covers the coffin bone, which is for the most part followed with blood. This must, of course, render a horse lame; and it is very difficult to form a reunion. The usual method taken to remedy this imperfection is by cutting off that part of the shoe which lies upon the chink, that it may be wholly uncovered; then, with a drawing-iron, to open the rift to the quick, filling it up in all parts with a rowel of hards dipped in turpentine, wax, and sheep's suet, melted together; renewing it every day until the same is filled up. After it is closed in the top or upper part, it is usual to draw the plate betwixt the hoof and coronet, which, by softening the hoof, and bringing a moisture into it, causes it to grow the faster and shoot downwards. But there are some who fear the coronet above the crack, without piercing the skin, just where the hoof begins, and with another iron fear the chink about the middle of the hoof; which succeeds very well, if care be taken to keep the hoof moist with applications of tar, honey, and grease. Some pour aquafortis into the rift when the pain is violent, to deaden the part; making a border of wax on each side, to hinder it from spoiling the rest of the hoof: and there are others who prepare a flat piece of wood, about an inch in breadth, but at the same time so slender that it will bend like a hoop, and of a sufficient length to go twice round the hoof; and having first drawn the whole length of the cleft, they apply turpentine, pitch, and suet, melted together, to the fore, and fasten the hoof with pieces of list or filleting. This is a

contrivance to answer instead of a bandage, to keep the chink united: but Gibson directs, that, instead of this troublesome way, the following method should be attempted.

"First," says he, "draw the whole length of the cleft gently with your drawing-iron; then anoint the hoof with tar, honey, and suet, melted together, as directed (for nothing can be more proper for the hoof), and lay a thin pledget, dipped in the same, along the cleft; after this, take of rope-yarn, such as the sailors use, which is no other than hemp moistened in melted pitch or tar, and spun loose: apply the yarn all down the hoof, beginning at the coronet, and descend downwards, one lay after another, as close as the binding of the hoops of wine-casks; laying a smooth pledget of flax behind, to keep it from fretting the heel. This should be opened once in three or four days, that the cleft may be dressed; and, to prevent any inconveniency that can happen by the opening, a thin staple may also be contrived, with points like horse-shoe nails cast off obliquely, to take a slender hold, the plate of it crossing the cleft where part of the shoe is cut off, and the nails coming out on each side of the cleft or the upper part, to be riveted as the other nails. By this method a cleft in any part of the hoof may be easily cured, if the horse be not very old or diseased."

Our late veterinary writers have done little else than acknowledge the difficulty attending the cure of this disease, and describe the inconveniences arising from its continuance; there is no reason, therefore, why the foregoing suggestions should not be attended to.

**FAMES CANINA**, dog-appetite, is such an insatiable hunger as is not to be satisfied with eating, but continues even when the stomach is full. This is a case much talked of by the ancients, but rarely met with amongst us. It seems to arise from fretting sharp juices in the stomach, which, by their continual vellications, excite a sense like that of hunger; and is to be conquered by medicines, and not ordinary food; such things as the testacea, all alkalies, and chalybeates. See APPETITE.

**FAR**, in the manege, a term used to denote any part of the horse's right side: thus the *far* foot, *far* shoulder, &c. is the right foot, right shoulder, &c.

**FARCY**, an external disease of the horse, of a very inveterate character. For the derivation of the word we must acknowledge we are unable to account. As a disease, however, we conceive that few are more tedious, disagreeable, or uncertain. It is no uncommon occur-



rence for every appearance of a speedy cure to present itself; and, while we are flattering ourselves by this delusive hope, we are, perhaps, disappointed in a moment by the sudden and unwelcome intrusion of the GLANDERS, a malady invariably fatal in its consequences. Even after what may sometimes be considered a complete removal of the complaint, we have reason to feel ourselves apprehensive of a relapse, or of a change of a more serious complexion.

The absorbents have usually been divided into the *deep-seated* and the *superficial*. The latter are very numerous, and more particularly so in the posterior extremities of the horse. They accompany the veins in their course, and are the seat of the disease we are now treating of.

General debility is supposed to be one great cause of farcy; also foul feeding, a want of proper exercise, a schirrous state of the mesenteric glands, injudicious bleeding, or the unseasonable administration of violent medicines. Farcy likewise will originate from contagion, and from inoculation with the matter of glanders. Indeed, we are led to conclude that there exists a striking affinity between these diseases; as they will mutually degenerate, and the poison produced by the one will propagate the other. Thus, by the application of the matter of farcy to the delicate membrane lining the nostrils, we give birth to glanders; and the discharge of the latter, inserted on the external parts of the body, will cause those ulcerations denominated *farcy-buds*.

At the commencement of the disease, a considerable enlargement and rigidity may be perceived in the affected absorbent, accompanied by much pain and inflammation. Glandular tumours are observed to arise, at first extremely sensible, but soon becoming schirrous: small ulcerations (the *farcy-buds*) are soon visible, discharging a foul and corroding sanies; the edges of these buds are thick and hard, and the whole has an unhealthy aspect. If these symptoms are permitted to increase, the discharge becomes absorbed into the circulation; the system, consequently, is speedily and totally tainted, the ulcers spread with considerable rapidity, and few parts of the skin will remain long free from them; the sheath enlarges, as also the extremities; the coat *flares*, and the skin attaches itself closely to the body. At such a period it will be no easy undertaking to afford permanent relief; but, where we have an opportunity of encountering the malady in its primary stages, we have a right to entertain very sanguine hopes of success.

Sometimes the farcy makes its first attack on the head, where, the old writers on the subject inform us, it may be expected to proceed with greater violence, and more pernicious consequences, than at any other part of the animal frame. Indeed, this assertion seems, in several points, well founded; as the maxillary glands will be liable to be affected, and the discharge from the ulcers may insinuate itself into the cavity of the nostrils.

In recent cases of farcy, where the animal is fleshy, or high in condition, it will, in general, lie in our power to remove the symptoms without the aid of the more powerful medicines. Moderate bleeding, a few mild purges, cooling diet, and proper exercise, will be required. The inflamed absorbent should be frequently and diligently fomented with flannels wrung out of the warm decoction of chamomile or common herbs, and the actual cautery may be freely applied to any buds that appear; after which they will assume the usual marks of health, and may be healed by dressing them with common digestive ointment.

Should the state of the animal, however, be otherwise than this, should he be low in strength and condition, his hide bound, and his coat staring, it cannot but be obvious, that bleeding, and medicines having a tendency to reduce the system, must be avoided. A different treatment, of course, must be employed. In the first place, it will be necessary to discover the primary sources of this deficiency in condition; which, perhaps, are imperfect mastication, worms, or bad grooming. These obstacles removed, we would recommend a generous diet, warm clothing, and regular and gentle exercise. The end in view may be farther assisted by what, in the language of the stable, is termed good dressing: indeed, by a proper attention to this latter circumstance, great benefit may accrue. It removes obstructions in the smaller vessels, and promotes a free and vigorous circulation on the surface of the skin, as has been noticed under the article DRESSING. Any inflammation or suppuration in the absorbents may undergo the treatment already pointed out, and one of the following balls may be given every second night, for two or three weeks, or longer.

Take of Antimony, in fine powder, eight ounces;  
Flowers of sulphur, four ounces;  
Aniseeds, in powder, four ounces;  
Honey, sufficient to form a mass for twelve balls.

Or,

Take of Gum Guaiacum, in powder, two drachms;

Tartarised antimony, ten grains;

Powder of gentian root, half an ounce;

Honey, sufficient to form a ball.

To be given nightly.

It is here proper to remark, that, although the above means may be adequate to the removal of the slighter cases of farcy, and where the progress is slow; in the more virulent stages, wherein the disease proceeds with considerable rapidity, we can only confide in the administration of remedies of the most powerful class: amongst these we give the preference to the different preparations of mercury. When the constitution of the animal has become vitiated by the absorption of the poison produced by farcy, the buds will be numerous, the absorbent vessels, and sometimes the veins accompanying them, will be hard and distended, painful swellings will probably attack the extremities, and the whole frame will soon wear a haggard and distressing appearance. At such a period the following ball may be given twice a-day, gradually increasing the proportion of the active material, whilst the state of the appetite or the bowels will admit of it, until it has arrived at three times the original quantity. Particular care must be taken that the horse is not exposed to the cold air; his clothing and his water should be warm; and his exercise regular and gentle, and in a mild temperature. Should any soreness or swelling ensue, from the use of these balls, about the mouth or throat, a laxative may be given, discontinuing the administration of the balls in the mean time, or even until the foregoing effects disappear. The possibility of producing salivation in the horse has been much doubted, and even denied, by veterinary practitioners; but we have found, in several instances, that it is practicable, and that to as full an extent as it can possibly be produced in the human subject.

Take of Muriated quicksilver (*corrosive sublimate*), twenty-five grains;

Verdigrise, half a drachm;

Liquorice powder, half an ounce;

Treacle, sufficient to make a ball.

The strength of this medicine is to be augmented, by adding ten or fifteen grains of the sublimate, every third or fourth day; and it should be continued, if successful, for ten days or a fortnight after every symptom of the dis-

ease has been removed. The horse's diet must be regulated according to the state of the condition he displays, the strength of his pulse, and the season of the year. If the balls cause any irritation in the intestines, it will be advisable to make an addition of thirty or forty grains of opium to each.

Where the animal is *full in flesh*, rowels will frequently prove of much advantage; but they can seldom be employed with propriety in lean and debilitated habits.

The disease termed the *WATER-FARCY*, by old farriers, is completely *dropical*, and may be owing either to a deficiency in the absorbents, or to an increased action of the secreting vessels; but, we believe, more particularly to the latter. In such cases we can discover no enlargement in the absorbents, nor is there the same appearance of ulceration as in the true farcy. It is usually removed, without much difficulty, by *DIURETICS*, or mild purgatives; but, in more obstinate instances, we would recommend the following medicine, with an attention to the precautions ever necessary during the administration of mercurial preparations.

Take of Aniseeds,

Gentian root, of each, in powder, six ounces;

Calomel, half an ounce;

Honey, sufficient to form a mass for twelve balls.

One of these may be given twice a-day: the clothing must be warm, during the horse's exercise in particular, which should be plentiful, and moderately brisk.

*FARINA*, or *FLOUR*; a substance which partakes of the nature of gum, but has more taste, is more fermentable, and much more nutritive. It abounds in very many vegetables, and is generally deposited in certain parts, seemingly for the purpose of its being more advantageously accommodated to their nourishment and growth. Several of the bulbous and other roots, such as those of potatoes, briony, those from which cassava is extracted, salep, and many others, contain a great quantity of white fæculæ resembling and really possessing the properties of farina. The plants of the leguminous tribe, such as peas and beans, are found also to abound with this matter. But the largest quantity of farina resides in grains, which are therefore called *farinaceous*. Of this kind are wheat, rye, barley, oats, rice, and other similar plants.

At first sight farina appears to be one homo-



geneous substance; it is, however, found to be a compound of three different and separable parts. To illustrate this, we shall take as an example the farina of wheat, being the vegetable which affords it in greatest quantity, and in its most perfect state. To separate these different parts, we form a paste with any quantity of flour and cold water; we suspend this paste in a bag of muslin, or such-like cloth; we next let fall on it a stream of cold water from some height, and the bag may now and then be very gently squeezed: the water in its descent carries down with it a very fine white powder, which is received along with the water in a vessel placed below the bag. The process must be continued till no more of this white powder comes off, which is known by the water that passes through the bag ceasing to be of a milky colour. The process being now finished, the farina is found to be separated into three different substances: the glutinous or vegeto-animal part remains in the bag; the amylum, or starch, is deposited from the water which has been received in the vessel placed below the bag; and, lastly, a mucous matter is held dissolved in the same water from which the starch has been deposited. This mucous part may be brought to the consistence of honey, by evaporating the water in which it is kept in solution.

These several parts are found also to differ remarkably in their sensible and chemical properties. The vegeto-animal part is of a whitish grey colour, is a tenacious, ductile, and elastic matter, partly possessing the texture of animal membranes. Distilled in a retort, it yields, like all animal matters, a true volatile alkali; and its coal affords no fixed alkali. It is not only insoluble, but even indiffusible, in water; both which appear from its remaining in the bag after long-continued lotions. Like gums, it is insoluble in alcohol, in oils, or ether; but it is also insoluble in water, and yields on distillation products very different from those afforded by gums. It is, therefore, of an animal nature, and approaches, perhaps, nearer to the coagulable lymph of animals than to any other substance.

The fixed alkali, by means of heat, dissolves the gluten vegeto-animale; but, when it is precipitated from this solution by means of acids, it is found to have lost its elasticity. The mineral acids, and especially the nitrous, are also capable of dissolving the vegeto-animal part of the farina.

The starch, amylum, or the amylaceous matter, makes the principal part of the farina. As

we before noticed, it is that fine powder deposited from the water which has pervaded the entire farina: it is of a greyish white colour, but can be rendered much whiter by making it undergo a certain degree of fermentation. Starch is insoluble in cold water; but in hot water it forms a transparent glue: hence the necessity of employing cold water in separating it from the vegeto-animal part. Distilled in a retort, it yields an acid phlegm; and its coal affords, like other vegetables, a fixed alkaline salt. As starch forms the greatest part of the farina, it is probably the principal nutritive constituent in bread.

The mucous, or rather the mucoso-saccharine, matter is only in a very small quantity in bread. This substance on distillation is found to exhibit the phenomena of fugar. The use of this matter seems to be that of producing the vinous fermentation; and we may observe, once for all, that the preparation of good bread probably depends on a proper proportion of the three different parts above described, viz. that the vinous fermentation is promoted by the mucoso-saccharine part, the acetous by the starch, and the putrid by the gluten vegeto-animale. From different states or degrees of these several stages of fermentation the qualities of good bread are probably derived.

FARRIER, or FERRIER (from the French *ferre*, or *ferrarius*, Lat. from *ferrum*, iron), one who forges horses' shoes, and fixes them on. As the notorious errors committed by ignorant persons in this occupation were the cause of many diseases in the foot, it naturally followed that the same practitioners were resorted to for the cure of the latter. Hence every morbid affection in the horse came at last to be treated by farriers, whose miserable blunders, however, have at length awakened the community to a sense of the evils which that most useful animal has been exposed to for so long a period; and the term *farrier* will henceforth be exclusively applied to the mechanic who fashions and fixes the horse's shoe, under the direction of the veterinary surgeon. In the farrier, too, some degree of sagacity and discrimination is necessary in the application of the new principles which should direct him in the exercise of his art. On this subject, see the article SHOEING.

FARRIER'S POUCH, in the manege, a leathern bag, in which they carry nippers, shoes for feet of all sizes, nails, and all that is proper for new-shoeing a horse that has lost his shoe upon the road.

FASCIA LATA, in anatomy, a part thus named from its inclosing most of the muscles

that lie on the limbs. See Plate VI. and the description under the article EXTERIOR.

**FASCIA LUMBORUM.** It is a strong tendon fixed to the lateral part of the os sacrum, from the spines of the sacrum, from the spine of the ilium, and the spines of the lumbar vertebrae. See the Plates of Anatomy.

**FAT**, an oily and unctuous part of the blood, deposited in the cells of the membrana adiposa, from the innumerable little vessels which are spread amongst them. The fat is to be found immediately under the skin in all the parts of the animal body, except in the forehead, eye-lids, lips, upper part of the ear, penis, and scrotum. In some animals the vesicles of the membrana adiposa are so full, that the fat is many inches thick; and in others they are almost flat, containing little or no fat. There are two sorts of fat; one white, or rather yellow, soft, and lax, which is easily melted, called *pinguedo*; another white, firm, and brittle, which is not so easily melted, called *sebum*, suet, or tallow. Some reckon the marrow of the bones for a third sort of fat. Dr. Grew takes the fat of animals to be a curdling or coagulating of the oily parts of the blood, either by some of its own saline parts, or by the nitrous parts of the air mingled therewith: whence it is that some animals, as rabbits and field hares, grow fat in frosty weather, the oily parts of the blood being then ordinarily coagulated with a greater abundance of nitrous salts received from the air into their bodies; and for the same reason it is that the fat of animals is hard, whereas that of fishes is soft, and runs all to oil, because the water in which they live hath but few nitrous parts in it in comparison of air. This opinion Dr. Grew supported by many experiments; but the truth of the hypothesis is, nevertheless, very doubtful.

**FATTENING**, the corporeal enlargement of cattle by means both natural and artificial. This is a considerable object of agricultural economy, except as it relates to the horse; for this animal is certainly more fit for labour, or, at least, for the *active* exercises to which he is usually destined, when not encumbered by fat. The fattening of horses, however, for the mere purpose of pleasing the eye of an equestrian novice, and getting a good price for him, is profoundly studied by the dealers. To promote their views, the old writers on farriery have treated the subject much at large; and, besides directing a pretty close confinement from exercise, and an unlimited supply of the most alluring articles of food, have prescribed medicines to rouse the appetite, and to promote those

functions of the animal on which nutrition depends. If the art of fattening horses, however, be an evil, and only to be attempted for fraudulent purposes (and that it is so will be shewn under the article FOOD, &c.), it is, of course, unfit for these pages, which have a far different end in view.

In those cases where a protracted disease has produced emaciation, *restoration* may be attempted by the means suggested under the article APPETITE.

**FAUCES**, the top of the throat of an animal; the space about the opening into the larynx and pharynx, which can be seen when the mouth is open and the tongue depressed.

**FAULTS**, or **DEFECTS**, in horses. See the article DEFECTS.

**FEATHER**, in the manege, a sort of natural frizzling of the hair, found in many parts of the horse's body, but more commonly between the eyes. Many are of opinion, that, when the feather is lower than the eyes, it is a sign of a weak eye-sight; but this is mere conjecture. A *Roman feather*, or the French *épée Romaine*, is situated upon a horse's neck; being a row of hair turned back and raised, forming a mark like a feather or sword-blade along the mane.

**FEBRIFUGE** (from *febris*, a fever, and *fugo*, to drive away), any medicine serviceable in a fever, of what form soever. See FEVER.

**FEEL**, in the manege. To *feel a horse in the hand* is to observe that the will of the horse is in the rider's hand, that he takes the bridle, and has a good appui in obeying the bit. To *feel a horse upon the haunches* is to observe that he plies or bends them, which is contrary to leaning or throwing upon the shoulders.

**FELON**. So the paronychia or whitlow, in the human subject, is called, when its seat is in the periosteum at the beginning. This term is also to be met with in books of farriery.

**FEMORAL**, belonging to the FEMUR, or thigh-bone; as the FEMORAL ARTERY, &c.

**FEMUR**, the thigh-bone. See Plate V. and the description of "*the lower limbs*," under the article BONES.

**FENESTRA OVALIS AND ROTUNDA**, in the ear (from *fenestra*, a window), the oval and round windows. See EAR.

**FENNEL**, FENICULUM; *Radix, semen: Anethi Fœniculi varietas*, Lin. The *sweet fennel* is smaller in all its parts than the *common*, except the seeds, which are considerably larger. The seeds of the two sorts differ likewise in shape and colour: those of the common are roundish, oblong, flattish on one side, and protuberant on the other, of a dark almost blackish colour;



those of the sweet are longer, narrower, not so flat, generally crooked, and of a whitish or pale yellowish colour. Both sorts are cultivated in our gardens: the common is a perennial plant; the sweet perishes after it has given seed, nor do its seeds come to such perfection in this climate as those which we receive from Germany. The seeds of both the fennels have an aromatic smell, and a moderately warm pungent taste; those of the *fœniculum dulce* are in flavour most agreeable, and have also a considerable degree of sweetness. They are ranked among the four greater hot seeds; and, being looked upon as good stomachics and carminatives, have a place frequently in veterinary prescriptions.

The root is far less warm, but has more of a sweetish taste, than the seeds. It is one of the five roots called openers. Boerhaave says, that this root agrees in taste, smell, and medical qualities, with the celebrated *genseng* of the Chinese; from which, however, it appears to be very considerably different.

The leaves of fennel are weaker than either the roots or seeds, and have very rarely been employed for veterinary uses.

FERME, in the manege, signifies to exercise in the same spot, without stirring or parting.

FERMENTATION, a spontaneous, sensible, internal motion of the constituent particles of animal and vegetable substances, by which these particles are removed from their present arrangements, and are connected together in new ones, forming substances essentially different. To effect this change, fire, water, and pure air, are necessary. The principal fermentations are the vinous, acetous, and putrefactive. These, in almost all vegetable, and in some few animal matters, seem to be one series, naturally divided into three stages; the appearances in each of which are the following. In the first stage, called the vinous, or sometimes the spirituous, fermentation (for the management of which a considerable proportion of water is required), the solution becomes turbid, a good deal of motion is visible in it, a portion of mucus subsides, another rises to the top (forming what is called *yeast* or *barm*), carbonic acid or fixed air in large quantity, and heat, are given out, tartar and alcohol are formed. In the second stage, or the acetous, this tartar and alcohol are reunited, and part of the mucilage, which is further changed, with a portion of the carbonic acid, pure air is taken in from the atmosphere, a larger quantity than in the vinous is given out, and vinegar is formed. In the third stage, called the putrid or putrefactive,

the proportion of water is more indifferent than in the two former, there is little alteration in the heat, nauseous vapours are emitted, mixed, during a great part of the process, with ammoniac or volatile alkali; a small proportion of earthy and saline matter remains: this hath also been called the alkaline fermentation, and ammoniac hath been considered the product. From this history it is evident, that fermentation may be considered that natural operation whereby dead animals and vegetables, undergoing many changes, are finally reduced to their original elements. The progress of fermentation requires time, but may be exceedingly accelerated or retarded by the management of heat or fire, water, and pure air; by the total exclusion of either of which fermentation is entirely prevented. It is also promoted by the use of ferments; and, on the contrary, retarded by resins, bitters, alcohol, acids, &c. which, in as much as they restrain the putrefactive fermentation, have been called antiseptics. All attempts hitherto made to solve the phenomena of fermentation must be allowed to be very defective.

FERMENTUM, ferment, barm or yeast, leaven; to which may be added, from late experiments, the carbonic acid, or fixed air; substances which enter into fermentation more readily than others. Pliny, in his *Natural History*, Lib. xviii. c. 7. speaks of the barm from malt liquor.

FERN, *FILIX MAS*; *Radix, Polypodii Filicis Maris*, Lin. Common male fern; the root. This vegetable is found growing in every part of Britain in great abundance, on uncultivated ground. The greatest part of the root lies horizontally; it consists of a great number of long blackish fibres, matted together, and issuing from a thick knotty head: it has a great number of appendages placed close to each other in a vertical direction, while a number of small fibres strike downwards. The large root, together with the appendages, are to be reserved. The two ends, however, are to be cut off; the one being too old and spongy, the other too new and green.

This root has been lately celebrated as an efficacious remedy against the *tænia*, or tapeworm, in the human subject: and, indeed, it appears to have been known to the ancients, and used with this view; as it is mentioned by Dioscorides, Theophrastus, and Galen. Whether it merits the notice of the veterinary practitioner is a matter for future enquiry.

FESCUE, or FESCUE-GRASS, a genus in Linnaeus's botany. He enumerates nineteen

species. Fescue-grass is cultivated as food for cattle. See GRASS.

**FETLOCK**, a tuft of hair growing behind the pastern joint of a horse. Hence the joint itself is called the *fetlock* or pastern joint. Horses of a low size have scarcely any such tuft; but some draught-horses have large fetlocks, and so much hair, that, if care be not taken to keep them clean, they will be subject to watery sores. See the article GREASE.

**FEVER**, an augmented velocity of the blood. The almost infinite variety of causes of this distemper in the human species does so diversify its appearances, and indicate so many ways of cure, that authors who have written upon it are very voluminous and intricate. But the fevers to which brute animals are obnoxious have not the same character by any means, all their diseases being exceedingly simple.

Simple or idiopathic fever, the most usual species that occurs in the horse and other cattle, is a preternatural acceleration of the blood's motion, and consequent heat. The compound species of this disease, or the associated and symptomatic, result from some morbid matter thrown upon the circulation, which acts with a virulence exactly commensurate with its proper qualities, and the pre-existing state of the body. Fever, in brute animals, is associated with a vast variety of diseases, of which **CATARRH** may be mentioned as a familiar instance. It is also a consequence of all violent accidents, as blows, fractures, &c. in which cases it has been named *general inflammation*. Fever, however, properly such, arises from spasm of the extreme vessels.

Speaking of this disease as it occurs in the human subject, Dr. Darwin, in his *Zoönomia*, gives the following theory.—“Simple fevers,” says he, “are of two kinds: first, the *febris irritativa*, or fever with strong pulse, which consists of a previous torpor of the heart, arteries, and capillaries, and a succeeding orgasm of those vessels; secondly, the *febris inirritativa*, or fever with weak pulse, which consists of a previous torpor of the heart, arteries, and capillaries, and of a succeeding orgasm of the capillaries, the torpor of the heart and arteries continuing. But as the frequency of the pulse occurs both in the state of torpor and in that of orgasm of the heart and arteries, this constitutes a criterion to distinguish fever from other diseases which are owing to the torpor of some parts of the system, as palsy and hemiplegia.”

Speaking of *compound fever*, he says, “When other parts of the system sympathize with this

torpor and orgasm of the cutaneous capillaries, and of the heart and arteries, the fever fit becomes more complicated and dangerous, and this in proportion to the number and consequence of such affected parts.”

The customary symptoms of fever in the horse are, great heat and dryness of the skin, jaws, and tongue, a strong breath, the pulse (which, in health, is from thirty-six to forty beats in a minute) quicker than natural or intermitting, dullness and inflammation of the eyes, heaving at the flanks, impeded respiration, the nostrils dilated, the ears and lower extremities hot, restlessness, fickle appetite both to meat and drink, sometimes avidity of drink, frequent casting out of dung-balls, and difficulty of staling, high-coloured turbid urine. These signs, at their commencement, Mr. Lawrence observes, may indicate nothing more than simple fever; but, if neglected, as is too common, either from want of care, or on the plea of necessity, the disease may become dangerous. We accordingly find, that some cases of fever will require the earliest assistance of our art to check the symptoms. The removal of fever in these must be attempted,

1st, By lessening the force of the circulation by venæsection.

2dly, By relaxing the intestines, and expelling any irritating matters, which otherwise would increase the disease.

3dly, By administering such remedies as have a tendency to remove *spasm* from the extreme vessels, and thus restoring them to the healthy standard of action.

4thly, By regulating the horse's treatment in the stable, viz. his diet, exercise, grooming, &c.

Lessening the force of the circulation by bleeding is the first object towards the removal of fever. And here, as the state of the blood is to be attended to as a guide in employing phlebotomy, it may be proper shortly to notice the component parts of the blood, in order that the practitioner may be assisted in forming his opinion respecting the quantity necessary to be taken away.

When blood is fresh drawn from a vein, it appears to be homogeneous, and of a red colour; but, when suffered to stand in the vessel, it soon coagulates, and divides into two parts, which are distinguished by the names of *crassamentum* and *serum*. The *crassamentum* is the red cake, and the *serum* the amber-coloured water in which it floats.

The *crassamentum* itself, indeed, consists of two different kinds of matter, namely, the red



particles and the coagulable lymph ; and these, when the animal is in a healthy state, are so intimately blended as to appear, when cold, a red uniform mass.

But, in cases of inflammation and fever, where the action of the heart and arteries is increased, the blood is longer in coagulating ; and the red particles being heavier than the coagulable lymph, which should suspend them, separate and fall to the bottom. This causes the yellow or buffy coat which is seen on the surface of coagulated blood in these diseases ; and as the mass of crassamentum is greater or less in proportion to the serum, and more or less covered with a thick yellow matter, so are we to estimate the degree of inflammation existing in the system, and the necessity for farther bleeding.

An attack of simple fever, taken in time, will commonly submit, in two or three days, to a course of medicine and treatment nearly similar to that recommended in a slight case of catarrh (see CATARRH). Mr. Lawrence proposes to bleed at discretion as to quantity, and give the following drink :

Take of Nitre, from one to two ounces ;  
Cream of tartar,  
Honey, of each a like quantity.

Give in three pints of a warm decoction of bran, or oatmeal-gruel, twice a-day ; plying the horse, in the interim, with as much of the latter as he will take, or, if necessary, drenching him with it.

If the inflammatory symptoms are augmented, and attended with violent pulsation, and throbbing in the arteries, so as to indicate the use of the lancet, Mr. Denny says, from *three* to *six* pints of blood may be taken away, and the operation repeated in a few hours, if the symptoms or state of the blood require it. He observes, that the greatest chance of success depends on *early* bleeding ; for, "*in the horse, the progress of disease is much more rapid than in man.*" After abating the force of the arterial system by bleeding, we are advised to give the following ball :

Take of Calomel,  
Antimonial powder, of each one drachm ;  
Nitre, in powder, one ounce ;  
Treacle, enough to form a ball.

This should be washed down with two or three pints of warm oatmeal-gruel, or bran-water.

" The large intestines should be emptied by means of clysters administered occasionally. For this purpose,

Take of Oatmeal-gruel, three quarts ;  
Common salt, two ounces ;  
Olive oil, half a pint.  
Mix them.

" Eight hours after giving the ball, let the horse have the following powder, dissolved in two pints of thin gruel, sweetened with honey, and repeated every six hours, until the febrile symptoms are abated.

Take of Camphor, in powder, half a drachm ;  
Antimonial powder, one scruple ;  
Nitre,  
Aniseed, of each, in powder, one ounce.  
Mix them.

" The horse should have warm mashies of bran, with a small quantity of oatmeal or corn mixed in them. Hay is to be given in small quantities. The water given for drink should not be quite cold. If the mashies, &c. are refused, he must be supported by oatmeal-gruel, given three or four times daily, until his appetite returns."

" If there be much cough, and without any mucous discharge from the nose, it would be more proper to give the mashies in a common *nose-bag* than put into the manger. The powder may be given in the following, instead of gruel :

Take of Decoction of linseed, two pints ;  
Honey, three ounces ;  
Tincture of opium, two drachms.  
Mix them.

" When the symptoms are abated, it will only be necessary to have the grooming part well attended to, and allow of walking exercise daily. Malt, and small quantities of the best oats, should be mixed with the mashies, to recruit the animal's strength ; and give the following ball every morning for ten or twelve days :

Take of Coriander seeds,  
Caraway seeds, of each, in powder, half an ounce ;  
Peruvian bark, half an ounce ;  
Ginger, in powder, two drachms ;  
Honey, enough to form the ball."

The practice recommended by Mr. Ryding is somewhat different from this. As a medicine tending to remove spasm from the extreme ves-

fels, and promote perspiration, we are told by that gentleman, that "the following prescription will be found excellent :

Take of Camphor, six drachms ;  
Nitre,  
Cream of tartar, of each two ounces ;  
Powder and mix these well together, and add  
Honey, sufficient to make the whole  
of a proper consistence, and divide into four balls.

"One of these balls may be given every six or eight hours ; his clothing should be warm, and his diet warm mashes of bran ; his drink should be warm water, with a little sweet bran or oatmeal sprinkled on its surface, or warm water-gruel." Perhaps we may be excused for hinting the propriety of joining tartarised antimony to camphor, rather than nitre.

The author has, indeed, in another place, given the following formula for a fever powder, in which antimony is the principal ingredient, though in very small quantity :

Take of Antimonial powder, ten grains ;  
Nitre,  
Cream of tartar, of each half an ounce.

Mix them for use.

This powder, he says, is excellent in inflammation or continued fever, given every two hours in a quart of strong linseed tea.

The clyster recommended by Mr. Ryder is as follows :

Take of Barbadoes aloes, half an ounce ;  
Linseed tea, two quarts.

To be injected a little warm every five or six hours, according to its effects.

If the irritation and fever, however, continue to increase after the above treatment, he directs a little more blood to be taken away, and the following given :

Take of Purified opium, one drachm ;  
Antimonial powder, two drachms ;  
Nitre,  
Cream of tartar, of each one ounce and a half ;  
Honey, sufficient to form the mass.

Divide into four balls ; one to be given every six hours.

"If the fever is attended with costiveness, twenty grains of calomel may be added to each ball, and the clyster continued. By these means," we are assured, "the fever will be removed, and the vessels recover their proper action."

As, in all cases of fever, the proper management of horses, with regard to the non-naturals, is of the utmost importance, we shall here introduce the excellent remarks of Mr. Clark, of Edinburgh, on that subject.

"If," says he, "a close, hot, foul-aired stable is pernicious to horses whilst they are in health, it is much more so to those that are sick, especially of a fever, and panting for breath. The most mischievous care is then taken to keep the stable uncommonly warm, by which means all fresh air is excluded ; the very threshold under the door, as I have elsewhere observed, even the key-hole, and not a crevice that would admit the least fresh air but what is shut up. In such circumstances, the pure air within the stable is speedily exhausted, and the atmosphere becomes extremely corrupted, inasmuch, that it is not only hurtful to the sick, but to the other horses that are in the same stable with him. This cause alone is sufficient to excite the most violent fever and inflammation in the lungs even of the most healthy and sound animal.

"Besides the great heat of the surrounding air in which the horse stands and breathes, his body is kept uncommonly hot, by means of a greater load of clothes than usual, together with a greater quantity of litter under him ; and, to add to all this, the vapour and hot steams which arise from the other horses' bodies, excrements, wind, and urine, that are shut up in the same stable, render the air very unfit for respiration ; the sick horse is stifled with heat and the closeness of the stable ; he pants for that fresh air which is excluded from him ; the great heat in which the horse's body is kept increases his disorder, and if sweating is produced, this, in many cases, aggravates it still more ; by carrying off the thinner parts of the blood, the remaining mass becomes more viscid and inflamed, which renders it less fit for circulation. In this situation, the best medicines, however judiciously prescribed, can be of no avail to the sick, as their effects are counteracted by the above treatment."

The too common practice of using too *tight rollers* above the horse's clothes is objected to by Mr. Clark, as confining the lungs, &c. by their compression, even in health ; but it is much more hurtful to horses when sick. "If,"



says he, "a *man* in a fever were girded round the breast with a roller or bandage, it would occasion the utmost anguish and difficulty of breathing, and endanger a suffocation; even the weight of the bed-clothes is found oppressive in these cases; how much, therefore, must this anguish and oppression be in horses that are sick, and panting for breath under a fever, when these rollers are girded so tight, that a horse even in health can hardly breathe with them? I have frequently found, that the ungirding of these rollers gives immediate relief to sick horses, especially in the above situation; and, on admitting fresh air into the stable, the violence of the symptoms was considerably abated.

"For the reasons now mentioned," continues the author, "a sick horse should, if possible, be removed to a well-aired stable by himself. But, as horses are very sociable creatures, and fond of being in company with others, where they are found to thrive best, another horse may be put in the same stable with him, but at as great a distance as the place will admit of, in order to let the sick breathe a purer air. His clothing should be very moderate, and by no means girded on too tight about the breast, but only in the slightest manner, to prevent them from falling off. The rack and manger ought to be washed clean from dirt, &c. with soap and water, before the sick horse is put into the stall; all the old litter, wet or musty straw, should be removed; the fresh litter that is put under him should be spread thin, as too much of it increases the heat about his legs, &c. The rack and manger are afterwards to be kept clean, and free from the discharges that may come from the nose and mouth, as they are very apt to lick these up with their food, or by way of amusement. When the horse's breath is very foetid, or of a bad smell, the violence of the fever still continuing, the rack and manger ought to be frequently washed or sprinkled with vinegar."

Under the article *DIET* will be found some useful hints of this judicious writer. Here it may not be improper to notice what he has said with respect to giving medicines to horses when they are sick; a period when the greatest caution is often necessary.

"In inflammatory cases," says he, "to which they are very liable, *every thing that is heating or irritating is extremely hurtful*, and may occasion the most untowardly symptoms, and even death. The common cordial drenches, that are too frequently given on most occasions, are the most pernicious and hurtful in inflammatory cases; as these are composed of hot spices, aro-

matic powders, with the oil of aniseed, &c. they aggravate the oppression at the stomach, and increase the fever.

"In order to lessen the great heat of the body, and to allay the internal commotion which then prevails, such medicines may be given as are termed coolers or sedatives, from their known qualities of restoring regularity to the vascular system. These, at the same time, have the power of removing spasmodic constriction in the vessels, from the calm which succeeds their administration; for which purpose, nitre or salt-petre is amongst the best, and agrees very well with horses. One ounce of this, dissolved in a quart of warm water, may be given three, four, or five times a-day, by a horn, when found necessary. I would here observe, in order to render the nitre more effectual, that it be in powder, and mixed with the water immediately before it is administered, as it loses considerably its cooling efficacy on being long dissolved: the draught may be sweetened with honey or molasses, in order to render it the more palatable. Another necessary caution I would recommend is, that the horse should be as little fatigued as possible in giving it. One man should hold up the horse's head with both his hands, whilst another pours the drink, by slow degrees, into his mouth; and, when the horse seems tired or fatigued, allow him time to rest himself, at intervals. A variety of other cooling draughts might be mentioned; but, as there is no absolute necessity for studying the taste of horses in this respect, and as nitre is found in general to sit easy on their stomachs, it will be found to be the best medicine that can be given in such cases. Those who may be willing to change the prescription may give the infusion of linseed, mixed with acids, as the juice of lemons or oranges, or a spoonful or two of vinegar, where nothing else can be got, administered as above, and a little sweetened."

Fevers in other cattle may be treated under the foregoing regulations, always attending to the state of the pulse (see *PULSE*). As all the varieties of fever to which man is exposed do not occur in these animals, it would be useless to lengthen this article by remarking upon them. Suffice it, therefore, to observe, that these subjects are mentioned under their several heads. See *CONTAGION*, &c.

*FIBER*, the beaver, the animal from which the drug called *castor* is obtained.

*FIBRE* (from *fiber*, *extreme*). Among the fluids in ovo there is a terrestrial matter, the particles of which, soon after conception, begin

to cohere (by the power of nature), and form themselves into threads called *fibres*. These terrestrial particles are united by a gluten. The most simple fibre consists of the most minute parts applied to each other longitudinally, so that the smallest fibre is that which consists of two elements longitudinally applied to each other, since one such element belongs only to the fluids.

Haller says, that the least discoverable fibres are of two kinds. The first are lineal; the second are conjoined with a breadth frequently larger than their length; and these latter, he informs us, are those of which the cellular membrane is made up.

On the different proportions of the terrestrial matter and the gelatinous, which forms the simple fibre, depend the different degrees of hardness and softness in the different parts of the body; and from the firm cohesion of these parts, or the defect therein, Boerhaave deduces the general source of diseases.

The strength or weakness of a fibre can only be defined in a relative sense. Soon after conception, the cohesion is so small as to be destroyed by a very gentle shock; but, as time advances, different degrees of cohesion are observed, till the degree is attained which gives perfection to the being. The perfection of cohesion is when a fibre, or vessel, &c. will bear, in some degree, more force to be exercised against it than what they are particularly designed for by their state and office. Many, but equally unsatisfactory, are the rules laid down to distinguish betwixt the rigid and lax fibre in particular constitutions; but, with a view to practice, in the recovery and preservation of health, as a rigid fibre is a concomitant of excessive heat, and the lax fibre of a deficiency thereof, an attention to the state of the patient's body will be a more easy and satisfactory principle on which to proceed.

As the medical treatment of other animals, no less than the human, depends greatly on a proper understanding of this subject, in which too the analogy applies pretty closely, we shall pursue it to some length; leaving its more immediate application to the judgment of the veterinary reader.

That state of the body in which there is a lax fibre Dr. George Fordyce calls the general weakness. He observes, that weakness may be divided into two kinds: the first, in which the irritation and sensation are considerably increased; the second, in which the sensations are greatly diminished, as in the apoplexy and

palsy. The first is called *single weakness*, which may be subdivided into two varieties: 1. When by any means it is produced on a sudden, in which case it is easily restored; 2. When it comes on slowly, and is restored with difficulty. These two, then, differ essentially, from their causes, symptoms, effects upon the system, and their manner of cure. The second is called *paralytic weakness*. Various are the causes of weakness: *e. g.* bleeding, by exhausting the living power; all evacuations, when too copious, and too long continued; antiphlogistic medicines, all which lessen the living power. A particular part may be weakened by exciting a secretion from the mucous gland of that part, or from a part which lies near, though not connected with it.

The system may be strengthened by various means, such as the following:

1. *By nourishing and generous diet.*—If the vessels have been suddenly emptied, give freely of nourishing food, as much as the powers of the constitution will easily digest: the vessels will receive it, and the strength will soon return. If the weakness approached slowly, good nourishment will not restore so speedily; for the organs of digestion being considerably weakened, and that gradually, renders the digestion of food difficult; therefore, in these cases, give moderate quantities of proper food, and repeat it often. In hectic fevers, sometimes the arteries are acting strongly; thence it is necessary sometimes to take off that great degree of contraction, by diminishing the system by bleeding; then the patient may be capable of receiving nourishing diet. When the stomach is weak, the patient should avoid those vegetables that produce acidity in the *primæ viæ*; hence flatulent kinds of diet are not proper. Farinaceous seeds, prepared and given with animal food, are the best.

2. *The body may be strengthened by exercise.*—When exercise is used, it should not be carried on to such a degree as to weaken the human body; it should be equal and universal through the whole body, not in any one part more than another: for this reason, riding in a carriage, &c. where the body is equally moved, is much preferable to any other; but, if we want to use a more violent degree of exercise, riding on horseback would be of great service. The patient should go out when the air is free and pure; thus the circulation is increased, and passes through the lungs without being obstructed: but, if he goes out in a moist air, the lungs become somewhat obstructed; then anxiety, &c. are



produced. The exercise should be agreeable to the patient, in order that the mind may be agreeably affected.

3. *The strength may be restored by means of cold.*—Cold contracts the external vessels, by which the internal, about the præcordia, are kept filled, which always tends to keep up the strength of the patient; farther, it takes off the irritability of the system, and prevents people, when exposed to cold, from readily suffering by it. If the cold be suddenly applied, it contracts the external vessels too much, by which the interior vessels are overloaded, and diseases, such as fevers, &c. are produced: therefore exposure to cold should be gradual, that is, it should be by living in a cold atmosphere; and, farther, it should not be too considerable, though applied slowly, for it will produce weakness, and, by its sedative power, often numbness of the limbs, anxiety, &c. This, however, must be according to what degree the man hath been habituated to. The transition from heat to cold, or cold to heat, should not be sudden. The cold bath has been employed to strengthen the system: it seems to be a very uncertain remedy; for a sudden exposure to cold contracts the vessels too much, and the interior vessels are filled, so that, after the patient comes out, the heart acts with greater force, and propels it again upon the skin: hence a sweat is produced; by this a kind of paroxysm is brought on. Sometimes it is of great service; but in diseases that are attended with weakness, where there are considerable secretions, as in a gonorrhœa benigna, &c. the discharges are sometimes reproduced, instead of being taken off. A temperate bath, in which is dissolved a quantity of astringent substances, as the sea-water, acts as an astringent on the skin after the patient comes out, and often strengthens the system. Cold climates have a greater tendency to strengthen the habit than the warm, as the atmosphere is more dense, and respiration more free.

4. *The system may be strengthened by the patient being situated so as to breathe properly.*—It is essentially necessary to have a quantity of respirable air to breathe in. There are two effects that respiration produces on the blood: in the first place, by propelling it backwards and forwards through the lungs, that it may not be accumulated in the right side of the heart; in the second, by what it conveys to and returns from the blood, its colour changes from a dark to a florid red. From a want of pure air, anxiety, &c. is produced, and a weakness soon follows.

Those who dwell in large towns are more subject to diseases from weakness; those who live in villages are generally more robust, and subject to inflammatory complaints. But although a cool air conduces in general to increase the strength, when the patient is greatly exhausted by profuse evacuations, or from long-continued weakness, by sending him into the country, the purer air there may cause too free and great a circulation; as the large vessels then contain but a small quantity of blood, such a weakness will thereby be produced as to cut the patient off.

5. *Medicines are the next means of restoring lost strength.*—These are such as invigorate the solids, chiefly by increasing the living power; of this sort are chamomile, gentian, wormwood, the bark, and some other bitter vegetables. Among the metals, iron is peculiarly adapted to usefulness on this principle. All these lessen irritability, whilst they give tone to the relaxed fibres. In cases where the habit hath been suddenly weakened, but the organs of digestion and the appetite are not impaired, there is not often occasion to employ these remedies, but only to use a nourishing diet. If, for example, a patient is weakened by a fever, and a few of the inflammatory symptoms remain, it is better to omit these medicines; but, if a degree of fever be left, and there is a want of appetite, colliquative purging, &c. and the strength does not return, we may use them with advantage. If weakness be brought on suddenly, and is attended with partial evacuations, it is necessary to employ them. When strength is suddenly lost, it is observable, that, amongst all the just-named medicines, the bark is the best. When the weakness is slowly produced, these medicines may be employed with great advantage, if suitable precautions are not neglected. (1.) In people of melancholy temperaments, where there is evidently a contraction of the vessels, as well as a weakness, which is indicated by a hard pulse, we should endeavour to take off this disposition to contraction before we employ them, which may be done by evacuation. Indeed, in melancholic habits, it often happens that we cannot by any means employ them. (2.) They are apt to destroy the irritability with regard to themselves; for if you give them at the first, for about a week, their effects are produced, the patient seems much relieved; but, after a continuance through a second or third week, their effects are in a manner lost. For this purpose, it is better to vary the medicines; giving the bark and steel alternately, and leaving

them off for a time, so that they do not become habitual to the patient; and then, after some time, the patient repeating them again, his strength is restored. When weakness is gradually brought on, and in consequence of lingering diseases, it is generally better relieved by bitters, and other strengtheners, than by the bark. If there be relaxation of the moving powers in general, preparations of iron are often preferable to either the bark or bitters; but, when the system is disposed to be stimulated, they cannot be employed with advantage. Iron having a stimulus, it should be given in a state of solution, which will lessen its stimulating power. But it should be remembered, that ferruginous preparations are not proper in melancholic habits, because their stimulus produces costiveness. In lax habits only they are to be employed. When strengthening medicines are given, they should not be directed in too large doses. If the bark, for instance, is given, two, or, at the most, four drachms, will suffice in twenty-four hours. Too large doses create weakness. When the stomach and the intestines are weak, the whole system is generally affected; and, on the contrary, *vice versa*. If the weakness of the *primæ viæ* is very great, it sometimes produces a palsy in these parts.

We conclude by observing, that, as the operation of medicines on different brute animals has been, as yet, very partially ascertained, we could only treat the subject of this article generally, as it applies to the human body. Its adaptation to veterinary purposes is, however, very evident, and the aid it will afford to the art of prescribing in the latter, we doubt not, will sufficiently apologise for its length.

**FIBULA**, the small bone which is attached to the tibia in the hind leg of the horse. See Plate V. and the description of "*the lower limbs*" under the article BONES.

**FIBULA**, the name of a contrivance of the ancients for bringing the lips of wounds together.

**FIG**, a spongy excrescence, which most commonly grows out on the foot in such horses as are high and hollow, with large fleshy heels.

Gibson says, "they are caused by all the common accidents that happen to the feet, as scurfing, &c. and oftentimes they are the consequence of a long-continued *gourdiness* in the legs and pasterns. Their seat is for the most part at the top or side of the frush; but, when they are suffered to grow old, or are dried up with strong ointments, they take another

course, and spread to the corner of the heel. They are, as most other excrescences of that kind, only to be cured by extirpation. Therefore, if the figs be on the side of the frush, pare away so much of the root as may give room to reach the fore with a fleam or a lancet; then cut the sole about the fig, and take them clean out, avoiding as much as possible to wound the large blood-vessels. Let the first dressing be made of dry hurds, to stop the bleeding; and, if it require a styptic remedy, apply such as are proper for stopping the bleeding: two or three days after, remove the dressing, and, if any part of the excrescence be left, destroy it, by applying ægyptiacum spread on pledgets of tow, mixing with every ounce of the said ointment half a drachm of arsenic or corrosive sublimate, enlarging or diminishing the quantity of the latter as you find the horse able to bear it, or the circumstances of the fore may require; and then heal up the fore with a good digestive, &c.

"But, if the fig has its insertion into the finewy or cartilaginous substances in those parts, you must take up the sole, and, if any part of the cartilage be corrupted, cut it off with a sharp instrument. If the bone be ulcerated and carious, touch it with a hot iron, and then dress it with pledgets dipped in tincture of myrrh with aloes, or with warm turpentine and honey of roses, until the bone be covered. Afterwards heal up the fore with some good digestive.

**FIGGING**, a well-known piece of stable-discipline among horse-dealers. Figging and firing (see **FIRING**) are generally practised. The first is, to thrust a "*corn*" (as it is phrased) of ginger into the fundament of a horse, or vagina of a mare, the instant of being led out to shew, for the purpose of creating irritation, and causing them to elevate the tail, which is thereby usually cocked up in a monstrous and almost ludicrous way. Mr. John Lawrence says, the London dealers, with some few exceptions, permit no servant to shew a horse without having previously *figged* him, under a certain forfeit. They assert they are obliged to purchase horses in the country shewn in that manner, and that they can do no less in justice to themselves than to shew them under similar advantages in town. The truth is, the custom is inveterate among them, and they can see no beauty or merit in a horse, unless he is transformed into a Merry-Andrew, and jumps about from side to side as if distracted, knocking his huggon-bones against every wall he goes near. But all this, he very properly observes, is but a



poor recommendation to a man of taste and judgment in horses, who is not to be duped by such stale artifices.

**FILAMENT**, in anatomy, a little thread, string, or fibre of any thing. In botany, it is that part of the stamen which serves to elevate the anthera or summit, and at the same time connects it with the flower.

**FILELLUM**, the frenum of the prepuce.

**FILETUM**, the frenum under the tongue.

**FILM** upon a horse's eye, an opacity of the transparent cornea, erroneously supposed by some to be capable of removal by an operation. See the article **EYE**.

**FILTRATION**, is the method of rendering fluids clear by passing them through a porous solid, as the filtering stone, compact close linen, woollen cloths, or porous paper, which is generally used for this purpose as a lining to a funnel, or such other vessel. Filtration is also performed on a principle somewhat different; as by immersing one end of a porous substance, as a piece of lisle, skein of cotton, or slip of thick paper, or other such substance, moistened in its whole length in the fluid, and allowing the other end of it to hang down over the outside of the vessel. The fluid in this depending part drains out by its own gravity, and is supplied by capillary attraction from the portion next within the vessel, which is supplied in the same manner from the surface of the fluid, till the whole passes over, unless too deep, these appearing to act as a siphon.

**FIMBRIÆ**. The extremities or borders of the tubæ Fallopianæ in women were formerly thus called, signifying a *fringed border*, which they resemble.

**FIRING**, the application of the firing iron, red hot, to some preternatural swelling, &c. of the horse, in order to discuss it. This is oftentimes done by clapping the firing iron to the skin, without piercing it.

The firing instrument or knife ought to be somewhat rounded on the edge, and gradually thicker to the back, sufficient to keep the heat of the fire for some time. It should be rubbed clean, that no dirt or ashes may stick to it; and not used until the flaming redness is in part gone off.

On the utility of this operation, Mr. John Lawrence expresses himself in the following way. "I must acknowledge," says he, "that I am by no means prepared to give a decided opinion on the subject of *firing*, or the application of the actual cautery, in strains: the truth is, I have had few horses fired, and with those few it did

not succeed. Its use is said to be, to discuss swellings by promoting absorption, and in contracting the skin to form a constant bandage round the sinews, both during the cure and ever afterwards. What strikes me as the most important benefit in the measure is, the support it is apt to give to the parts *after the cure*. The necessary precautions respecting the operation upon the back sinews are, that the parts to be fired be not in a state of inflammation, that no cross lines be made on any account, that the fire be only given deep enough to have sufficient effect upon the skin, without burning the sheaths of the tendons; that no person be suffered to mount the horse, but that he be turned to grass, as soon as convenient, for at least three months. The windgalls, I think, should be let out previous to firing. When the operation is intended to be very effectual, the lines are drawn thick around the leg, from the bottom of the pasterns almost up to the knee. I should conceive that fewer lines would make a firmer bandage. I must remark also, that a man's common sense must naturally depict the operation of cauterizing as a very delicate one, and by no means within the power of every heavy-handed smith.

"When the pastern joints are exceedingly full and swelled, the legs gorged, the tendons enlarged, in fact the parts indurated, there seems an almost absolute necessity for blistering and firing, since no other measures will be sufficiently discutient."

The author apprehends, with respect to race-horses, that there are few but "must be shortened in their speed, if fired to any effectual purpose;" and that, after all, it is a chance "but that a force sufficient again to start the tendon must also be adequate to loosen or burst the bandage."

It is the practice at the Veterinary College, in firing, to draw the lines vertically round the affected limb; the contraction of the skin in that direction forming the most effectual and uniform bandage on the part.

The use of firing with respect to spavins, ringbones, &c. is treated of in their proper places. See the articles **SPAVIN**, &c.

**FIRING**, a certain discipline of the whip, used by fraudulent horse-dealers, in order to terrify a horse, and thereby arouse every spark of mettle in him. "This," says Mr. John Lawrence, "is an everlasting source of cruelty, perpetrated by a race of brutal and insensible miscreants, who would be as little scrupulous to derive gain from the torture of their own

species. Horses, whilst in such hands, live in a constant state of apprehension and misery. Almost every hour in the day the tormentor goes into the stable, like a West-Indian negro-driver, whip in hand, and inflicts the cruelty of the lash upon each horse, in order to make him lively, and apt to fly even at the sound of a man's foot; and this correction, from habit, from a desire of reaping all its imaginary benefit, and from supposed causes of offence, is often performed with the utmost force. But the barbarity is never so monstrous, or rather hellish, as when inflicted upon the debilitated and crippled objects of excessive labour. Too much of this is practised at the sales of worn-out post-hacks and machiners. I once saw a poor mare, stone-blind, exquisitely shaped, and shewing all the marks of high blood, most unmercifully cut with the whip about a quarter of an hour before the sale, in order to bring her to the use of her stiffened limbs: it was a fruitless piece of cruelty; her labour was done, and she was receiving her reward from the hand of ungrateful man! I saw the tears trickling down her cheeks, and to me it was an affecting sight. All this barbarity is totally unnecessary; for the intent of it is so generally known, that it can deceive nobody: nay, it often has the effect of producing sudden cramps in a horse, and always of spoiling his trot upon a shew. I insist upon it, from long observation, that *all horses are shewn to the best advantage by a moderate use of the whip.*"

**FISURE**, a simple fracture of the skull. This term implies a mere division of one or both the tables of the skull, with or without a wound of the integuments, and which is not attended with depression. Fractures of this kind are not dangerous as far as affects the skull only; for it frequently happens, that extensive fissures heal without producing bad symptoms. But as they are frequently attended with effusions of blood or serum upon the brain or its membranes, or as they may tend to excite inflammation in these, they require particular attention.

When effusions occur, symptoms of compression immediately follow. The remedies best suited to this disease must then be applied; and the trepan is alone to be depended upon. The fissures should be traced through their whole extent, and a perforation made on the most depending part of each of them. If this be unsuccessful, the operation should be repeated along the course of the fissures as long as symptoms of a compressed brain continue; and as the effused matter will commonly be found con-

tiguous to the fissures, they ought to be included in each perforation.

If the fissure be so large as to produce an obvious separation of the two sides of the bone, the nature of the case will be at once rendered evident; but, where it is extremely small, there is difficulty in distinguishing it from the natural sutures, or from sutures surrounding small bones, which sometimes occur, and get the name of *ossa triquetra*. But this may be known by the firm adhesion which always exists between the pericranium and sutures; whereas this membrane is always somewhat separated from that part of the bone where a fissure is formed. When the pericranium is separated by the accident for a considerable way from the surface of the bone, various means have been contrived for discovering the nature of the case; as pouring ink upon the part suspected to be fractured, which, in case of a fracture, cannot be wiped entirely off. The oozing of the blood from a fissure is a better mark. The ascertaining of this point, however, appears not very material; for, unless alarming symptoms are present, although there should be a fissure, no operation is necessary; and, if such symptoms occur, the bone ought to be perforated whether there be a fissure or not.

When a fissure is not attended with symptoms of a compressed brain, the trepan ought not to be applied, especially as the operation itself tends in some degree to increase inflammation of the part. The fissure should be treated merely as a cause which may induce inflammation. The patient should be bled according to his strength; the bowels should be kept lax, and the fore treated with mild easy dressing; and violent motion should be avoided as long as there is any danger of inflammation occurring.

**FISTULA**. This disease, in the horse and other animals, may be denominated a sinuous ulcer, differing from the true sinus in being of a much longer duration, in having its internal surface and external aperture indurated, and discharging from the opening a fluid of a sanious nature. All fleshy parts of animals are liable to fistula: in treating of the horse, however, we are more particularly to attend to that of the parts called the **WITHERS** and the **POLL**, as being the most frequently met with; and as a knowledge of the method to be pursued with these will afford us a tolerable conception how to act with the rest.

Fistula is produced by blows, bruises from the saddle, or by whatever may cause inflammation. Suppuration taking place, and the



matter finding no proper outlet, it insinuates itself gradually into the cellular membrane, where, occupying the interstices of the muscles, and taking various directions, it forms what are termed *fistulæ*, or *pipes*, conveying a constant sanious discharge, as has been observed. Injuries of the bones will also produce fistulæ; and to these causes may also be added, the presence of extraneous bodies.

When we undertake the cure of a fistula, it will be requisite, in the first instance, to ascertain the direction it pursues, and whether it materially interferes with any of the larger blood-vessels, so as to render a full incision into the parts a matter of too much hazard to be attempted. Finding ourselves secure from any danger of this description, we believe the most effectual practice is, to lay the fistula, or fistulæ if more than one, so thoroughly open, that we can have a complete view of their internal surfaces. We are not, under this article, attempting to point out a remedy for simple sinus, where the matter is in a healthy state, and requires only a sufficient passage; but for a disease, which, the discharge having been long detained, assumes a new power, indurating and corroding the contiguous parts. The means that might be found fully adequate to the removal of the former will avail little in the radical cure of the latter: a more severe system must of necessity be enforced.

When the cavities of fistulæ have been sufficiently exposed by the aid of the knife, they should be dressed with powerfully caustic compositions, until the unsound parts slough away, and the wound presents a healthy aspect. Cleanliness and the milder applications are now to be substituted, taking care that the wound is not closed before the cavities are properly and uniformly healed.

For farther particulars on the nature and treatment of fistulæ in different parts of the bodies of horses, we refer the reader to their respective heads, as POLL-EVIL, WITHERS, &c.

FIXATION, a term used by the old chemists to denote that new arrangement in the particles of bodies originally volatile, by which they became capable of resisting the action of fire.

FIX-FAX, a name given by farriers to the *cervical ligament*, a tough, white, flat, and long substance, attached to the muscles of the neck, and stretching itself in the direction of the horse's mane. In some counties it has the name of TAX-WAX. Its office is to relieve the suspensory muscles of the task of continually acting

to support the weight of the head whilst the animal is grazing.

FLAMMULA JOVIS, *surrecta alba*; the upright lady's bower. It is the *clematis recta*, or *clematis foliis pinnatis: foliolis ovato-lanceolatis integerrimis, caule erecto, floribus albis pentapetalis tetrapetalisque*; Class POLYANDRIA, Ord. POLYGYNIA, Lin. Gen. Plant. 696. Upright traveller's joy. This, like some other species, is extremely acrid; hence the name *flammula*. The recent leaves, on being chewed, excite a burning heat of the tongue and fauces, and, if retained long in the mouth, ulcerate and blister; though, by drying, this acrimony is considerably diminished: the flowers possess the same acrimony, though in a less degree. The herb with the flower is caustic; the root, seed, and bark, if rubbed with the fingers, then held to the nostrils, strike them very quickly with a strong smell. This plant yields a water as strong as spirit of wine, but it has not been deemed safe to administer it internally in human diseases; though Storck published several cases of its successful exhibition, particularly in inveterate syphilitic and cutaneous affections, &c. He chiefly recommends an infusion of two or three drachms of the leaves in a pint of boiling water, four ounces to be taken three times a-day, whilst the powdered leaves were employed as an escharotic. It may be worth while to try the effects of this seemingly powerful remedy on brutes. However, in this country, it has not acquired any reputation; for physicians do not receive with any degree of confidence the medical facts of Vienna.

FLANKS, the sides of a horse. In a strict sense, the flanks are the extremities of the belly, where the ribs are wanting, and below the loins. The distance between the last rib and haunch-bone, which is properly the flank, should be short: this is termed *well coupled*. Such horses are most hardy, it is said, and will endure labour longest. A horse is said to have no flank, if the last of the short ribs be at a considerable distance from the haunch-bone; although such horses may at the time have very good bodies, yet, when they are hard laboured, they will lose them. A horse also is said to have no flank when his ribs are too much straitened in their compass, which is easily perceived by comparing their height with that of the haunch-bones; for they ought to be as high and equally raised up as the latter, or but very little less, when the horse is in good case.

A horse is likewise said to have scanty flanks, to be *gaunt-bellied*, and *thin-gutted*, when his

flank turns up like a greyhound's, and his ribs are flat, narrow, and short. A well-flanked horse is one that has wide and well-made ribs, with a good body.

**FLATULENT**, swelled or puffed up with air. In some diseases there is considerable flatulence, as in the colic. Some tumours have been called *flatulent*, but often improperly, their contents being only soft, and easily yielding to the pressure of the fingers. The only instance, perhaps, of flatulency in the muscular parts is in the disease termed *emphysema*, in which air from the lungs has got admission to the cellular membrane of a part, through a wound made by a fractured rib, or otherwise. See the article **EMPHYSEMA**.

**FLATUS**, wind gathered in the bowels, or any cavities of the body. It is usually caused by indigestion, and therefore is discussed by warm aromatics. Flatulency is caused in cattle by their having eaten inordinately of clover, &c. See **CATTLE**.

**FLEAM**, a small instrument of fine steel, composed of two or three moveable lancets, for bleeding a horse.

**FLESH**, that component part of an animal body which, anatomically, is termed *muscle* (see **MUSCLES**). It consists of bundles of red fibres, laid side by side, and connected together by cellular membrane. Those exuberant granulations which rise up in an ulcer above the level of the surrounding skin (and to restrain which nothing but dry applications and pressure by bandage are necessary) are vulgarly called **FROUD FLESH**. See **FUNGUS**.

**FLEXOR**, a name applied to several muscles, from their office, which is to *bend* the parts to which they belong. Thus we have the *flexor capitis*, *flexor carpi*, &c. For these, see the different plates of the *Muscles of the Horse*.

**FLING**, in the manege, the fiery and obstinate action of an unruly horse. To fling like a cow is to raise only one leg, and to give a blow with it. To fling or kick with the hind-legs, is called *yerking*. See **YERK**.

**FLINTS**. When two or three parts of alkaline salt are added to one of vitrifiable earth, and the degree of heat is carried no further than to melt the mixture, without giving time for the alkali to evaporate, the product obtained is a vitriform mass, in which the earth is held in solution; but, as the mixture retains a great superabundance of alkali, it preserves almost all the properties of alkaline salt: it powerfully attracts moisture from the air, and deliquesces. In this state it is called **LIQUOR OF FLINTS**.

**FLOWERS**, in chemistry, are the most

subtile parts of dry bodies, which rise by fire to the top of vessels made on purpose to receive them; as the flowers of sulphur, benjamin, &c.

**FLOWERS OF ZINC**. These are to be considered as the calx of that semi-metal. This calx is very refractory, and in the highest degree fixed. It has a powerful effect on the human constitution. Its operation on brutes remains to be ascertained.

**FLUATES**, are salts formed by the combination of the fluoric acid with the different alkaline, earthy, and metalline bases. There are twenty-four species enumerated in Fourcroy's *Elements of Natural History and Chemistry*.

**FLUCTUATION**, a term in surgery. When matter is formed in an abscess, and lightly pressed with the fingers, the motion of fluctuation may be distinctly felt.

**FLUOR ALBUS**, the disease in women called the **WHITES**. It is sometimes found to exist in old broken-down mares, in whom an habitual discharge of white matter from the vagina takes place. Astringent injections, as the solutions of alum, vitriolated zinc, or other metallic salts, are proper as topical remedies, and **DIURETICS** internally.

**FLUX**, or **BLOODY FLUX**. See **DYSENTERY**.

**FLUXION**, a term used by the chemists in the same sense as *fusion*; and signifies running any metals or other bodies into a fluid, by fire or otherwise. It also signifies the same as *defluxion*, or *catarrh*.

**FLY THE HEELS**, in the manege. A horse is said to *fly the heels*, when he obeys the spurs.

**FOAL**, or **COLT**. See the article **COLT**. It is said to be no difficult matter to know the shape that a foal is likely to be of when full grown; for the same shape that he carries at a month he will carry at six years old, if he be not abused in after keeping; and as the good shape, so will be the defects also. As to the height, it is observed, that a large shin-bone, long from the knee to the pastern, indicates a tall horse. Another way of judging is, to see what space he has between his knee and withers; which being doubled, it will be his height when he is a competent horse. There are also means to know their probable goodness; for, if they are stirring, not apt to be frightened, active, and striving for mastery, some writers assert, they generally prove good mettled horses.

**FOAL-TEETH**. See the article **AGE**.

**FOALING**, the act of parturition in the mare. It sometimes happens that mares kill



their foals, through carelessness, or from being entangled in the stable with their halters, or through the difficulty they have in bringing them forth.

"Since mares go with foal eleven months and as many days as they are years old," says Solleyfel, "you may guess near the time when she should foal; and, therefore, should cause a servant always to attend her, that he may assist in case of necessity, and observe whether it be for want of strength or courage that the mare does not bring forth her foal: in which case, he is, with his hand, to close her nostrils, which will make her press to have breath; in making which effort she will be delivered."

Reasoning from analogy, we doubt the propriety of this treatment; which can scarcely answer any other end than that of tormenting the poor animal at a most unseasonable moment. The same writer recommends a sort of wine-potset to be given, in case the foal be dead in her belly, calculated, as he says, to promote the mare's delivery.

If this remedy, however, has no effect, then he advises some skilful person, with a small hand, first having anointed his hand and arm, to endeavour to pull out the foal, either whole or in pieces; "and if he cannot get a good hold of it, he is to tie a strong whip-cord round its neck, and so pull it forth as gently as possible." Sometimes foals appear with their feet foremost; "in that case," he says, "you are to thrust them in again, and with your hand endeavour to pull forth its head, at least its nose, thereby to facilitate the mare's delivery." See the article OBSTETRICS.

FOAM, the white frothy matter which falls from the mouth of a horse that champs the bit of his bridle.

FODDER, dried herbage, stored up for the sustenance of cattle during the winter, when grass cannot be had. See FOOD.

FŒNUGREEK, or FENIGREEK, *Fœni Graci semen*; *trigonellæ fœnigræci*, Lin. the seeds of which only are used. This plant is cultivated chiefly in the southern parts of France, Germany, and in Italy, whence the seeds are brought to us. They are of a yellow colour, a rhomboidal figure, a disagreeable strong smell, and a mucilaginous taste. Their principal use is in drenches for cattle, in cataplasms, fomentations, and the like, and in emollient clysters. Gibson commends this remedy as exceedingly useful to horses that are consumptive, or inclined to be broken-winded.

FŒTUS. The human or brute animal in the womb is thus called, after it is perfectly

formed; before that it is called *embryo*. The human foetus, when formed, is almost of an oval figure, whilst it lies in the womb; for its head hangs down with its chin upon the breast, its back is round, with its arms it embraces its knees, which are drawn up to its belly, and its heels are close to its buttocks, its head upwards, and its face is towards its mother's belly; but, about the ninth month, its head, which was always specifically lighter than any other part, becomes specifically heavier, its bulk bearing a much smaller proportion to its substance than it did, and consequently it must descend in the liquor which contains it; so its head falls down, its feet rise up, and its face turns towards its mother's back: but because then it is in an irksome, though favourable, posture for its exit, the motion it makes for its relief gives frequent pains to its mother, which causes a contraction of the womb for the expulsion of the foetus.

The analogy obtains, generally speaking, in brutes; allowing for the difference between the horizontal and upright positions.

FOMENTATION, is a sort of partial bathing, by applying hot flannels to any part dipped in medicated decoctions, whereby steams are communicated to the diseased parts, their vessels are relaxed, and their morbid action thereby removed.

The following formulæ for fomentations are taken from recent veterinary publications.

Take of Leaves of wormwood, two handfuls;  
Bay leaves, one handful;  
Rosemary leaves, one handful;  
Chamomile flowers, one handful:

Boil these in three quarts of water to two quarts; then add to the strained liquor  
Spirit of wine, four ounces.

Take of Common mallow leaves, two handfuls;  
Marshmallow leaves, two handfuls;  
Leaves of rue, one handful.

Boil them in three quarts of water to two quarts.

Take of Marshmallow leaves, two handfuls;  
Chamomile flowers, one handful;  
Elder flowers, one handful;  
Lavender flowers, one handful;  
Rosemary leaves, one handful.

Boil in three quarts of water to two quarts, and strain.

The following more simple and cheap formula is given by Mr. Denny; and, as the virtues to be expected from this kind of remedy depend chiefly on its *heat* and *moisture*, may just as well answer the purpose as those which precede it:

Take of Chamomile flowers,  
Dried leaves of wormwood, of each  
two handfuls;  
Water, six quarts:

Boil them for ten minutes: then strain,  
and add of

Viuegar, one quart.

**FOMES** (from *fovendo*), fewel. When spoken of diseases, it is the internal or antecedent cause which foment and continues a disease.

**FONCEAU**, in the manege, the bottom or end of a cannon bit-mouth; that is, the part of the bit that joins to the banquet. See **CHAPERON**.

**FONTANELLA**. It is the membranous part which is found in new-born animals at the coronal and sagittal commissures, and which, in length of time, hardens into a bone.

**FONTANELLA**, or **FONTICULUS**, signifies strictly a little spring, and is used to express an issue, seton, rowel, or any such-like artificial discharge.

**FOOD**, the substances eaten by animals, under the impulse of natural instinct, to sustain the body. Providence has ordained that different beings should be supported by such productions of the earth as are especially adapted to their organization. The kinds of food usually appropriated to the use of different domestic animals are too well known to need a description. Some observations on the different qualities of fodder and grain that are used for horses may be important, as well as to point out the effects they produce on the body, in consequence of an *improper use of them*.

Hay, Mr. Clark observes, is the principal fodder used for horses in Britain. Although there are a great number of herbs and grasses mixed with it, yet they are all included under the general denomination of *hay*. The common distinction that is made is that of natural or *meadow-hay*, and the fown or *rye-grass hay*. The natural hay is generally used in the southern parts of Britain. From the method observed in the making of it, and allowing it to heat to a certain degree in the rick, it acquires an uncommon smell, something like that of malt dried on the kiln. This practice likewise gives it a sweetishness to the taste, and it is

then called *mow-burnt hay*. Horses eat greedily of it; and, as it is of a soft quality, they swallow large mouthfuls without chewing it properly. This, producing thirst, causes them to drink a great deal of water, which considerably increases the bulk of the stomach. In this state, the lungs, the diaphragm, and other viscera surrounding it, are compressed to an uncommon degree; and if the horse is then put to any exercise that requires activity or expedition, he is in danger of becoming broken-winded; for it is always observed, that the latter disease may be traced to some instance of sharp exercise performed when the stomach is full. Mr. Clark says, he has likewise observed a greater number of broken-winded horses in countries where this kind of hay is used than in those parts where rye-grass is the common fodder.

Gibson, however, in his treatise on the food of horses, condemns the use of rye-grass. He says, that "in England, it is seldom given but in the months of August and September, except to horned cattle. Before Michaelmas it is tolerably hard and dry, especially in dry seasons; and many feed their working horses with it, mixed with dry clover: but afterwards it imbibes so much moisture that it becomes unwholesome, and few horses that have been used to good hay will care for it." Here, however, Mr. Clark differs from Mr. Gibson; for he says, that, where rye-grass mixed with a little clover is much used, it is found to be a clean wholesome fodder for horses; and those that are constantly fed upon it are not so subject to be broken-winded as those that are fed with natural hay that is mow-burnt, whilst, at the same time, they perform the exercises required of them with strength and vigour. Nor does he, in another respect, agree with Gibson, who, in the same page, says, that "soft hay, of all others, imbibes moisture the easiest, and retains the effects of it the longest, which generally turns it rotten and unwholesome, and so affords but a crude faint nourishment; and those horses that are forced to feed upon it, for want of better, are generally weak and faint, and in time grow diseased."

It is well known, says Mr. Clark, that natural hay is much softer than rye-grass hay; of course, it is more liable to attract moisture, and to acquire all the bad qualities above mentioned: whereas rye-grass hay, being harder and firmer in its texture, will not so readily become moist; consequently, according to the author's reasoning, the latter should be the wholesomest fodder for horses. Another re-



commendation in its favour is, that, being harder and firmer than natural hay, it obliges a horse to chew it more completely before he can swallow it. This makes it easier of digestion, less bulky in the stomach, and, of course, not so liable to produce the bad effects which have been mentioned.

But, whatever be the quality of hay, much depends upon its being well got in; for the best grass that ever was cut for this purpose may be spoiled by wet weather, or by bad management; and, where there is a choice, the *best* should always be given to horses that are employed in active exercises.

"*Clover-hay*," says Mr. Clark, "should only be given to cattle and draught-horses, whose labour is slow and equal. It cannot be recommended as a proper fodder for horses that stand much at rest, nor to those who are used in violent exercise of any kind, as they are apt to over-feed upon it.

"*Wheat-straw* is generally used as litter. It is seldom given as fodder, unless to draught-horses, or when it is chopped or cut small, and mixed with oats, &c. in order to oblige horses to break their food thoroughly before they can swallow it. Yet the highest fed horses, when it is fresh laid before them, are not only fond of picking the unthreshed heads of wheat that remain on the straw, but are likewise fond of the straw itself, by way of a change.

"*Barley and oat straw* are the common fodder of cattle and farm-horses. They are seldom given to the better kind of horses, unless it be out of economy, or by way of amusing them when they stand idle in the stable, and to prevent them from being restless for want of other food.

"*Pease and bean straw* are a dangerous fodder to horses that are not brought up or gradually accustomed to it, as it is hard of digestion. It is likewise apt to produce flatulencies, attended with griping pains and obstructions in the bowels. It is commonly given to work-horses and horned cattle.

"*New hay* of any kind should not be given to horses, more especially to those employed in active exercises, as they feed upon it too greedily, and swallow it without chewing it properly. It overloads the stomach, and, at the same time, produces a crude watery chyle, which disposes the horse to sweat much, which weakens greatly; therefore it should never be given till the superfluous moisture it contains is dried up, which will require some months after it is got in. But to such horses as are employed in

very active exercises, it should at least be eight or ten months old.

"*Grass* is the most natural food for horses; but, whether it proceeds from the coldness of the soil or climate in Britain, it does not produce such rich nourishment as to enable them to perform any active exercises with the same strength and vigour as in warmer climates, without the addition of grain, as oats, &c. When horses are allowed to run abroad, and have a sufficiency of oats, and, at the same time, are provided with proper shades to protect them from the inclemency of the weather, we find, from experience, that they thrive and perform any active labour as well as those horses that are kept in stables on dry food only; together with this advantage, that they are not so subject to diseases, nor to lameness, but what, in the latter case, may proceed from accidents among themselves.

"Grass is not only food, but it is likewise physic, to horses—I mean the early or spring grass. When the viscera are sound, *it cures most of the diseases they are subject to with more certainty and expedition than can be done by medicine.* After a long course of dry feeding and hard labour, it restores the constitution to the highest health and strength. It cleanses the bowels, and carries off those chalky concretions that are apt to be produced in the stomachs of such horses as have been long used to dry hard feeding. It likewise carries off the different species of worms with which they are infested. It renovates, as it were, the whole mass of fluids in the body. It promotes all the secretions, and removes glandular obstructions; and, in many cases, it carries off stiffness in the joints, and other lameness; and, upon the whole, it restores the body to the highest state of perfection of which it is capable."

The author, however, observes, that the usual advantages that arise to horses from their feeding on spring grass are in a great measure lost to them, if they are allowed to *continue through the summer*, when the grass becomes too rank; for they then grow fat and corpulent, and by no means fit for active exercises of any kind, which cannot be attempted without danger. It is customary, indeed, when horses are too fat, and full of blood, to reduce them by bleeding, purging, &c.; but these, when too frequently repeated, impair their constitutions, and bring on a premature old age.

If, instead of undergoing this kind of medical discipline, those horses that are intended for hunting, &c. were taken up from grass as soon as it begins to shoot, and kept in constant daily

exercise, although fed with a very moderate allowance of oats at the time, as the hunting season approaches, both their feeding and exercise may be gradually increased. They will become, by this management, in a proper condition for the severest exercises, without any purging or other evacuation. See the article *PHYSIC*.

Another salutary effect of grafs is, that it dissolves the concretions that are apt to grow in the stomach and other viscera of horses. Van Swieten, when treating of chalky matter found in the liver in the human subject, says, that incrustations, like gypsum, or plaster of Paris, were often observed by Glisson in the *pori bilarii*, and its larger branches, dispersed through the livers of oxen that had been fed in stalls with hay and straw, during the winter season, and without exercise. These concretions, however, were very friable, and would "dissolve again, and pass out of the body, when the cattle came to feed upon the fresh grafs of the meadows;" for, in oxen that are slaughtered in spring and summer, these substances are very rarely found.

The experience of Mr. Clark confirms this statement; for, in dissecting horses, he frequently met with chalky concretions in the liver and in the lungs, especially in those animals that had been fed long on *dry food*. In other instances, he found round or oval balls in the stomach, seeming, for the most part, to be composed of the dust they lick from their own bodies, mixed with the hair. Whether the fresh grafs dissolves these, he says, is not so certain; but that it causes these concretions to pass through the intestines, he had a full demonstration in the following instance:

"In May, 1786, a horse that had been long fed on dry food was turned out to grafs; in about eight or ten days afterwards, he was seized with violent griping pains, which lasted about twenty-four hours, when he died. As the horse was very fat, the man who had the charge of him wanted to make something of his grease: in searching for it, he observed a large portion of the intestine of a very black colour; and, on feeling it, found something hard and weighty. He immediately cut the intestine open with his knife, and took out a large oval hard ball, which measured four inches in length, and three inches and a half in breadth. That this concretion was originally formed in the stomach there can be no doubt, as they frequently, upon dissection, have been found there; and nothing but its great bulk had hindered it from passing through the intestines."—That these solid accumulations are

not by any means unfrequent we have shewn under the article *CALCULUS*, where a means of preventing this evil is suggested by Dr. Withers of Newbery.

Mr. Clark further observes, with respect to the properties of spring grafs, that those horses that cannot be turned out to pasture should have it given them in the house as soon as it can be cut. Indeed, he reprobates the too general, and even *boasted*, practice, of feeding horses, *for years together*, on hard *dry food*; to which he ascribes that loathsome disease the *farcy*, which prevails most in England, where dry food is more persevered in than in Scotland. To the objection that horses kept for active exercises reap no advantage from oats, &c. whilst they are at grafs, because the grafs tends to carry off the nourishment that should be produced by the former, he answers, that, "although the early grafs purges a horse gently at first feeding on it, yet this purging *does not continue long*, neither is it attended with that weakness, faintness, and loss of flesh, which is observed in horses purged by strong medicines, where the evacuation is brought on suddenly, and perhaps to an excess."

"A change of diet," the author observes, "is not only agreeable, but wholesome for horses, as it contributes to keep them open in the body. Malt mixed occasionally with their food proves a medicine."

"*Wheat*, notwithstanding it affords the most nourishment, is seldom given to horses, probably owing to its price being higher than that of other grain. It is apt to purge horses a little on the first using of it; they eat it greedily, and are fond of it: but, as it becomes very slippery from the moisture in the mouth, it is swallowed whole, and passed through the body in that state; but, when it is given bruised, or mixed with chopped straw, the horse is obliged to break it minutely with his teeth before he can swallow it." It then proves very nourishing, and enables him to go through much labour. It likewise makes a horse coat well, and causes his hair to lie smooth and shining."

By lord Kaimes's calculation, the boll of middling wheat weighs fourteen stone, Dutch weight; the husks weigh two stone: for which reason, when wheat is given to horses, a less quantity will be necessary than of oats, the proportion of nourishment being as the weight.

It is well known, that *barley* purges horses on the first using of it; but, when it is given mixed with cut straw, it proves a wholesome nourishing diet. The Arabian, the Barbary, and other eastern horses, eat it; and these ani-



mals undergo great fatigue, and perform journeys with incredible swiftness. In England, however, farmers, grooms, &c. are much prejudiced against feeding their horses with barley, as they allege that it gives them the itch. But Mr. Clark affirms, from his own experience, that it has a very opposite effect; and that, if horses troubled with cutaneous eruptions are fed on barley, either raw or boiled, it will contribute greatly towards their cure. The boll of middling barley weighs eighteen stone, Dutch weight; the husks one stone four pounds. When it is boiled, it proves light, and easy of digestion; for which reason it may be properly given to horses when they are sick, or to prevent costiveness.

"Oats, notwithstanding they are reckoned more heating and binding than any of the former grain, yet they are generally given to horses in Britain. To post and other carriage horses they are frequently given mixed with beans, which obliges them to break both oats and beans minutely before they can be swallowed. The adding of the beans makes this feeding very nourishing. On that account, beans should never be given mixed with oats to those horses that stand much at rest, or have not sufficient exercise. The boll of middling oats weighs fourteen stone, Dutch weight; the husks weigh six stone. Therefore, as oats have more husks than any other grain, a greater quantity is necessary. For this reason, it is probable that the standard measure of oats is larger than that of other grain. The constant feeding with oats, although it is esteemed what is called *clean feeding*, yet it is apt to make horses too costive, &c.; to prevent which, bran, mashed up with boiling water, is given once a-week, or as circumstances may require.

"Beans are seldom or never given to horses by themselves, unless to labouring horses. When they are boiled, they afford the strongest nourishment of all the other grain. The boll of middling beans weighs fifteen stone eight pounds; the husks weigh eight pounds, which is the smallest proportion of husks in all the grain now mentioned. Of course, they contain more nourishment; but, as they contain a great proportion of fixed air, when given in a raw state and in too great a quantity, they are found to produce flatulence, gripes, &c."

After having fully described the different kinds of fodder, grain, &c. and their uses in the feeding of horses, Mr. Clark proceeds to consider how these are or ought to be applied to the greatest benefit. He quotes the count de Buffon (vol. iii. page 375), who asserts, "that

the Tartar horses will travel two or three days without stopping; receiving, for four or five days on end, only a handful of herbage every eight hours; and, at the same time, kept from drinking for twenty-four hours." In the same volume (page 369), the same writer says, "that the Arabian horses are rather meagre than fat. During the day they are not permitted to eat, but are watered twice or thrice. At sun-set, a bag, containing about half a bushel of barley, is passed over their heads, and fastened to their necks. This bag is not removed till next morning, when the barley is entirely consumed. When the grass is good, they are turned out to pasture; and, during the rest of the year, they are allowed neither grass nor hay, and rarely straw, barley being their only food: and great care is taken to give them only as much as is barely necessary; for *too much nourishment makes their legs swell*, and soon renders them useless."

In another place, the count tells us, that "the horses which are bred in the Indies are very indifferent. Those used by the great men of the country are brought from Persia and Arabia. They are fed with hay during the day; and, at night, in place of barley and oats, they get pease boiled with sugar and *butter*. This nourishing diet supports them, and gives them some degree of strength: without it they would soon perish, the climate not being adapted to their constitution."

Mr. Berringer says, "the Indians feed their horses in the rice-fields; and, when flesh is plenty, they boil the offal to rags, and, mixing it with *butter*, and some sorts of grain, make balls, which they thrust down the horses' throats. In scarcity of provision, they give them *opium*, which has the same effects both on horses and men; for it at once damps their appetites and enables them to endure fatigue."

We may here advert to Gibson's objection to the use of greasy or oily substances as food for horses. See the article BUTTER.

The count de Buffon likewise tells us (vol. iii. page 388), that, "in Iceland, where the cold is excessive, and where often no other food can be had than dried fishes, the horses, though small, are extremely vigorous."

"The Arabian horses intended for hunting in Arabia or Barbary seldom eat herbage or grain. Their common food, which consists of dates and camels' milk, is given them every morning and at night. These aliments, instead of fattening them, render them meagre, nervous, and very fleet. They spontaneously suck

the she-camels, whom they follow till the time they are ready for mounting, which is not before the age of six or seven years."

Mr Berringer, in his curious work on horsemanship, says, "Nemesian recommends straw and barley as very nourishing diet; and it certainly conduces very much to keep horses in health, spirits, and wind, and in a state of body fit for any kind of labour, as it supports and strengthens, without rendering the animal heavy and corpulent.

"The Kalmuck horses are so hardy and strong in their constitution as to be able to run three or four hundred English miles in three days. They subsist, summer and winter, solely upon grass in the great deserts."

The rules of diet applicable to horses, and the common errors of those concerned in the care of them, are thus judiciously treated of by Mr. Clark.

"As horses are not endowed with reason, but guided entirely by instinct to such aliments as correspond with their constitutions, the appetite for food excites in them a strong desire to gratify this sense. They are therefore apt to *indulge in it to excess* when it is laid before them, especially grain of any kind, and more so when confined in the stable, where they have no other amusement to divert them from it. For, in the fields, at grass, after they are satisfied with eating, they run about, and play with one another a considerable part of their time, and do not begin to eat till prompted to it by hunger. For this reason, there are few or no instances of horses over-eating themselves when running at grass.

"Young horses, in particular, are most liable to be injured by too much feeding with grain. The blood of young animals is naturally disposed to be hot; high feeding increases this disposition, and renders them more subject to inflammatory diseases. Hence dry feeding with oats, &c. produces a plethoric habit of body, which renders them liable to fevers, swelled legs, and greasy heels, and, upon catching the least cold, to a variety of other disorders.

"Besides the ordinary feeding with oats, &c. at stated times through the day, it is too common to keep the racks at all times filled with hay. Hence many horses, having stuffed themselves, drink a great quantity of water, and, when they come to be exercised, they are hardly able to breathe. Numbers of horses are daily ruined from this practice; yet many people are not aware of its effects."

"There are horses too of delicate stomachs, who loath their food, from its being too con-

stantly before them, and not having sufficient time or exercise to digest what they have eaten; besides, having constantly breathed upon it, they cannot relish it afterwards. It ought, in all cases, to be remembered, that it is not the quantity of food merely which a horse eats that produces the wholesomest nourishment, but it is what he digests well that invigorates and strengthens; for, when the stomach is overloaded with food, the body is dull, heavy, oppressed, sluggish, and stupid, and the digestive faculty is impaired.

"*Throwing great quantities of grain before horses at one time* is very improper: they, in this case, dip their mouths in it with eagerness, by which means they grasp more than they can break down properly; they devour it greedily, and swallow whole mouthfuls of it almost dry. The natural moisture of the stomach, or water drunk immediately after eating, causes the grain to swell, by which the stomach is greatly distended, and thereby loses its contractile power to act upon the food. By its uncommon pressure upon the intestines, the passage for the food backwards is obstructed. The confined air, arising from the indigested food not having a ready passage backwards, and horses not possessing the power of eructation, or belching, the air, by the heat and confinement, becomes rarefied to a great degree, and the horse is seized with the most acute pains; as they increase, he becomes convulsed, and in many cases the stomach bursts, and death follows of course. Out of a number of cases where the above was discovered on dissecting the bodies of horses," says Mr. Clark, "I shall only mention the two following.—

CASE I. "A young draught-horse was fed in the morning with too great a quantity of barley mixed with pease, and had been allowed to drink water immediately thereafter. He was yoked to a two-wheeled chaise, in order to travel a few miles, and was observed, about the middle of the day, to be very uneasy, frequently attempting to lie down. As soon as he was unyoked, he lay down, and tumbled about, frequently lying on his back, starting up suddenly, and turning his head towards his belly. He continued thus in great agony till towards next morning, when he died. Upon opening his body, the stomach was found burst, the barley and pease mostly entire, only greatly swelled, and the whole contents of the stomach, which were very considerable, spread through the abdomen."

CASE II. "The other case was that of a horse who had been fed with too great a quantity of



oats and barley, and had been allowed to drink water freely afterwards. He was seized with griping pains, so that he frequently lay down and tumbled, seemingly tortured with the most acute pains. He died next day. Upon opening his body, the stomach was found distended to a most enormous size, but was not burst. Its coats were so very thin, from the great distention it had undergone, that its cohesion was almost destroyed, and had more the appearance of a coat of mucus or slime than the stomach. The oats and barley were for the most part entire as they were swallowed, only greatly swelled from the moisture they had imbibed."

These cases clearly shew how necessary it is not to allow horses to eat too great a quantity of grain at one time, but to give it them in small quantities, and repeat it the more frequently, spreading it carefully in the trough or manger. At the same time, they shew the propriety of mixing chopped straw or hay with the grain, in order to make them chew it thoroughly before they swallow it; a circumstance to which the earl of Pembroke particularly adverts in his excellent treatise upon horses. "Every grain," says he, "goes to nourishment; *none is to be found in the dung*; and three feeds of it go farther than four, as commonly given, which have not been in the mill. But wheaten straw, and a little hay too sometimes mixed with it, is excellent food. To a quarter of corn put the same quantity of straw. It obliges them to chew their meat, and is in many other ways of use."

The opposite extreme, namely, *too small an allowance of food*, when horses are worked hard, also disposes them to many diseases. A famished horse becomes weak and spiritless, his body emaciated, his circulation faint and languid. Dropsical swellings appear in different parts of the body, but particularly in the extremities; the blood loses its natural colour and quality, and the animal sinks under a complication of diseases, which are consequent upon an impoverished state of the blood and juices. "Hence, therefore, it will appear," says Mr. Clark, "what care and attention are necessary in the feeding of horses, and how much depends on the conducting it in a proper and regular manner."

"Although it is extremely difficult to lay down any fixed rules for the feeding of horses, yet it may be observed, in general, that all extremes in the feeding of them ought to be avoided. Those that are constantly employed in hard labour, or active exercises, require to be fed with more grain than those that stand

much at rest in the stable, or only perform gentle exercises, which occasion no great waste in the constitution. Upon the whole, the feeding of horses ought at all times to be *proportioned to their labour*, or the exercises they are employed in.

"Post-horses, hunters, and other horses employed in such violent exercises, ought to be fed chiefly with grain during the time of their being so employed. The former frequently eat from four to six or more feeds of oats, mixed with beans, per day, of the oat standard measure, which is the largest measure of all other grain. But this high feeding should not be continued for too great a length of time, without a little relaxation both from severe labour and high feeding. The latter should be changed occasionally to that which is soft and moist, as boiled barley, malt, or a little fresh grass in the season. This should be continued for a short time only, by way of change of diet."

"Wheat and barley should likewise be given to horses frequently, by way of a change of diet; and all grain that is given them, if possible, should be *bruised in a mill*, or otherwise, for the reasons already mentioned. This would not only be a saving of grain, but attended with considerable advantage in other respects."

Too *new* grain of any kind should never be given to horses that are employed in active exercises: it produces the same bad effects as new hay, and disposes the horse to sweat much, and frequently occasions a severe looseness. Indeed, if the grain, at the same time, chance to be bad of its kind, the diarrhoea may continue with such severity as to prove fatal; of which we have too many instances.

Costiveness, which is another effect of hard dry food, Mr. Clark says, should be particularly guarded against. This, like most diseases to which horses are liable, is easier prevented than cured, by giving mashes of bran, boiled barley, or malt, once a week, or oftener, by way of prevention. Out of many cases of this kind, which Mr. Clark says he has known, he relates the following.

CASE III. "A horse had been neglected in this respect. He was seized with griping pains, and was treated in a very absurd manner, by giving him ardent spirits, aromatic powders, and pepper. It was at last discovered that he had not had any passage, either by dung or urine, for some time. After he was raked, he staled plentifully, but the griping pains still continued. Emollient injections were then proposed, but too late to give him any relief. Upon opening his body, a very large quantity





# Structure of the Horse's Foot.

Fig. 6.



Fig. 1.

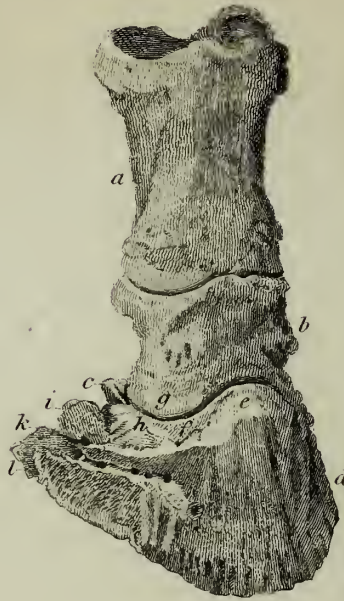


Fig. 2.



A



Fig. 3.

B

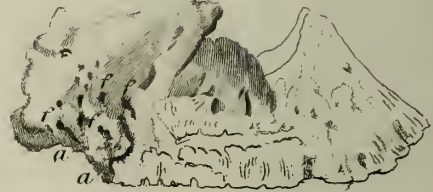


Fig. 4.

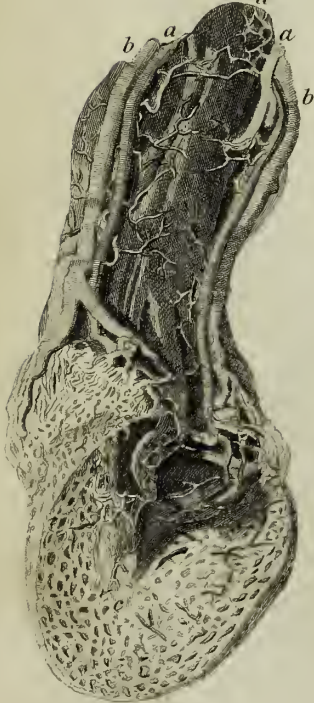


Fig. 5.



Fig. 7.

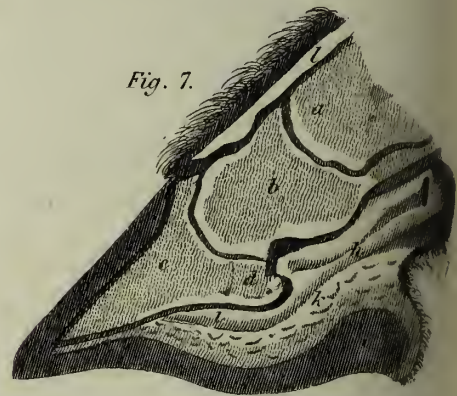
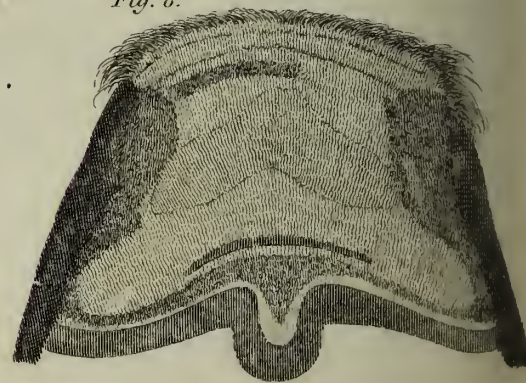


Fig. 8.





of hardened dung was found in the intestines; the latter of which were of a black livid colour."

When horses cannot go abroad, as in bad weather, to exercise, Mr. Clark says, they should be tied up to the rack for some hours, or a bundle of wheat-straw should be given to amuse them. There is no danger, he says, of their eating too much of it; on the contrary, it will be of great service to them. Horses should always have their stated times of fasting, as well as of feeding. If properly managed, the keenness of their appetite for hay will discover itself by nearly the same eagerness which they shew for their oats.

On the common opinion, that hay cannot be too old for such horses as are employed in active exercises, the author observes, that *very* old hay not only has lost its juices and flavour, and of course is become unfit for nourishing the animal, but it requires a great supply of saliva from the mouth and jaws to moisten it for swallowing, which creates thirst. Horses consequently are not fond of feeding upon it; neither do they care to eat much of it, without drinking water frequently, which, in the above cases, would be very hurtful. In fact, if any thing can be said in favour of old hay, for horses that are employed in active exercises, it is, that they cannot, for the reasons already mentioned, eat too much of it, and having, at the same time, a good allowance of grain.

We cannot, perhaps, do better than attend to the practice of the Arabians, whose horses are very fleet, and undergo incredible fatigue, though allowed but a scanty share of fodder, and that of barley-straw. They are mostly fed, as has been observed, with barley, which keeps their bodies rather meagre than fat; a state or habit of body certainly the best adapted for active exercises of any kind.

**FOOT**, that part of an animal which, in standing or walking, is placed next the ground. The figure and structure of the foot differs essentially in different quadrupeds, in all of whom it is liable to occasional disease, even in a state of nature. The feet of such animals as are laboriously employed in the service of man, however, are especially obnoxious to disease, not merely in consequence of their unremitting exertions, but also of the very means used to defend this part from being injured by hard and stony roads, whilst moving rapidly along, or struggling under enormous burdens. This means, namely, **SHOEING**, or defending the hoof with a plate of iron, having been long practised upon the horse, without any reference to the

actual structure and economy of his foot, has been a fruitful source of disease and misery to that most useful animal: nor is it till within a very few years that this important part of the veterinary art has been brought to any sort of perfection. Under the articles **SHOEING**, **HOOF**, &c. the foot will of course be the subject of some remark: in this place, however, we may most properly describe the anatomical structure of those parts which are enveloped by the hairy skin, and inclosed within the hoof. The most succinct and comprehensive account of the anatomy of the foot is given by Mr. WHITE. To that gentleman's useful publication, and to the more splendid work of Mr. FREEMAN, we are indebted for the following account, and the figures to which it refers.

"It has been very justly observed," says Mr. White, "that if we wish to examine a perfect foot, such as nature made it, it is generally necessary to find one that has *never been shod*; for the common mode of shoeing is so frequently destructive, that we seldom meet with a horse whose feet have not lost in some degree their original form; and this deviation from their natural shape is generally proportioned to the length of time he has worn shoes. From this circumstance, writers on farriery have been led to form various opinions respecting the most desirable form for a horse's foot: but, had they chosen to consult nature, this variety of opinion would not have existed; they would have been convinced, that the feet of all horses that have not been taken from a state of nature, or improperly shod, are nearly of the same shape: and, surely, no one will dispute that this form, which the Creator has given it, is the most perfect, and far better adapted to all the purposes for which the animal was designed, than any that can be given it by the most ingenious farrier.

"A person unacquainted with the anatomy of the horse's foot would naturally suppose, that the internal parts are simply inclosed by the hoof, and that, by its hardness, it served to protect them from the blows and pressure to which they would otherwise be constantly exposed. But very little reflection would convince him how incomplete and inadequate such a protection would be: let him consider that those internal parts are replete with blood-vessels and nerves, and possessed of a high degree of sensibility; let him consider also, what an immense weight is thrown upon them at every step, and what painful concussion must be occasioned to the animal were this the only safeguard against it: but Nature, ever provident,



has so constructed this part as to obviate all those inconveniences. If we examine any part of the animal economy, we are astonished at the infinite wisdom that is displayed in it. It is not, however, too much to assert, that the structure of the horse's foot is strikingly beautiful and curious: here we find a variety of wonderful contrivances to prevent any painful concussion from the most violent exertions, or from carrying heavy burthens; but such is the folly and obstinacy of farriers, that they frequently destroy or pervert the whole of this beautiful mechanism, and the poor animal is doomed to painful labour or perpetual lameness."

"The horse's foot is made up of a great variety of parts; some of them possessing blood-vessels and nerves, like other parts of the body, and highly sensible; others are composed of dead horny substance, that is perfectly destitute of feeling. All the external parts of the foot, which, when taken together, are termed the COFFIN, or HOOF, are composed of this horny substance, which is not only very hard, but is possessed also of a considerable degree of toughness and elasticity, which render it extremely durable, and well calculated to protect the sensible parts which it incloses—a purpose for which it was obviously designed by Nature.

"The hoof consists of the *wall* or *crust*, the *sole*, the *frog*, and the *bars*; the upper part of the crust, where it is connected with the skin, is termed the *coronet*, the lower part in front the *toe*; the sides of the crust are named the *quarters*, the quarters terminate in the *heels*, and the heels are connected with the *frog*. The crust grows from the coronet; and, instead of taking a perpendicular direction, becomes oblique in its descent, whereby it acquires a conical figure, being considerably wider at the basis than at the coronet. But this description of the hoof applies only to the healthy foot, that has not been improperly treated; for, when the bars have been cut away, and the frog mutilated and prevented from receiving pressure, the heels will contract, or approach each other, and the shape of the foot will be considerably altered.

"When we examine a hoof that has been recently separated from the foot, an immense number of small orifices, or pores, may be observed in that groove which is found on the inside of the coronet; into these orifices the extremities of those vessels are inserted which secrete the horny matter, the whole of which appears to be pervaded by a fine fluid, serving to prevent brittleness, and to preserve in the hoof

a proper degree of elasticity. All the internal surface of the crust, except the groove we have just mentioned, is covered by a beautiful membranous or laminated substance, which very much resembles the under surface of a mushroom. These are united, or rather interwoven, with similar laminae or membranes which cover all the anterior and lateral surfaces of the sensible foot, forming a very secure union between the crust and the internal parts: nor are these membranes possessed merely of great strength; they possess likewise a considerable degree of elasticity, constituting one of those curious springs which Nature has provided to prevent concussion when the animal is in motion. That these laminae form an union between the crust and sensible foot, of sufficient strength to support the animal's weight, has been proved beyond a doubt, by removing from a living horse the bottom of the hoof, that is, the sole and frog: in this case, had the laminae been unable to support the horse's weight, the internal foot must have slipped through the hoof, so as to come down upon the ground; but this did not happen, and the sole, as it was reproduced, assumed its proper concave form.

"As these laminae form so secure an union between the crust and the internal foot, it is evident that the weight of the horse is in great measure supported by the crust, which therefore ought to possess considerable strength; for, if it were too weak and flexible, it would not be adequate to the burthen which it has to sustain, and must consequently bend to it. In this case, the hoof would lose that oblique form which it had originally, and would approach the horizontal line; at the same time, the sole would lose its concave form, from receiving an unusual degree of pressure, becoming flat, and at length convex or projecting. But, when the crust is sufficiently strong, the internal foot, and consequently the whole animal, is suspended by those elastic membranes, as a carriage is by its springs; and, though the bottom of the internal foot is in contact with the sole, it nevertheless does not press upon it considerably, except when the horse is in motion, and then the back part of the sole descends a little (being somewhat elastic), and suffers the laminae to elongate in a small degree, so as to prevent any painful concussion."

That portion of the hoof which comes in contact with the ground is formed by the sole, the frog, and the bars. On these Mr. White makes the following observations:

"The sole is rather concave, or hollow, on

its external surface, and consists of a different kind of horn from that which forms the crust, being of a scaly texture, and sometimes soft and pulverable, on its exterior surface. Its use is to defend the sensible sole, that lies immediately under it. From its concave form, the horse is enabled to tread more firmly on the ground, and the sensible parts are less exposed to blows or pressure than they would be, had it been made either flat or convex; and, being somewhat flexible and elastic towards the heels, it assists in the action of those curious springs we have just described."

The FROG, a very important part, will be particularly considered under that head.

The internal or sensible foot, represented at fig. 6. in the plate, is endued with great sensibility; and so nicely adapted to the coffin, or hoof, that it completely fills it, without suffering the least inconvenience from pressure; but when the foot has been improperly treated, when the frog has been mutilated, the bars destroyed, and shoes applied that are either turned up or made very thick at the heels, the hoof must necessarily contract, and its cavity become diminished; so that the nerves and blood-vessels being compressed, the circulation of the blood is impeded, and lameness will naturally follow.

All the anterior and lateral surfaces of the sensible foot are covered with that membranous or laminated substance which we have before described; but it differs from those laminæ which are found on the internal surface of the crust, in possessing numerous blood-vessels. At the upper part of the sensible foot, where the laminæ terminate, a roundish projecting body may be observed, extending all round the coronet to the back part of the frog; this is termed the *coronary ring*: its surface is covered with the extremities of blood-vessels, and it is from this part that the hoof is formed.

The bottom of the internal foot is formed by the sensible frog and sole; the former perfectly resembles in shape the horny frog, to the concavities of which its convexities are nicely adapted. The horny frog is connected with two elastic cartilages, that are in great measure covered by the heels and quarters of the hoof; but this connection is through the medium of the sensible frog, which is more immediately united to those cartilages. When the former comes into contact with the ground, and receives the pressure of the horse's weight, the latter is forced upward, and rendered wider; and, at the same time, the cartilages are forced upward and outward, tending thereby to ex-

pand the heels and quarters, and assisting in taking off concussion. From the sensible frog and sole, the horn which composes the external frog and sole is secreted, and for this purpose they are supplied with numerous blood-vessels.

The sensible sole lies immediately under the horny sole, by which it is defended from blows or pressure. When the horny sole becomes thin, and incapable of performing its function, if flat shoes were applied, or if the sole were suffered to bear upon the ground, lameness would be the consequence; and it is for the purpose of preserving the sole from pressure that the concave or hollow shoe is employed in those cases. When these parts which we have described are removed from the sensible foot, the tendons, ligaments, and bones, come into view.

The principal blood-vessels of the horse's foot are thus described by Mr. Freeman. One large artery, he observes, accompanied by a corresponding vein, passes along the posterior concave surface of the *cannon-bone*, covered by the flexor tendon, till they reach the lower projecting surface of that bone. There they each divide, and proceed on each side of the flexor tendon, throwing out various ramifications, till they arrive at the cartilages. The main trunk on each side, at this part, sends off two principal branches, one of which goes round the coronet, and anastomoses with a similar branch from the artery on the opposite side, making what is called the *coronary artery*. The other runs along the cartilage to the fleshy frog, sending off a number of branches in its course. The trunk itself is continued down into the hollow of the foot; and, when it arrives at the processes of the foot-bone, sends off one large branch, which, passing through the cartilages between these processes, runs transversely in a groove along the anterior surface of the bone, and is lost upon the soft parts which cover it, putting out several branches which enter into the substance of the bone. This artery, as soon as it has passed the processes, sends off one branch, which passes downwards to the inferior edge of the coffin-bone, and runs along that edge, distributing branches in every direction. The main trunk on each side passes along a groove, and through a perforation, into the substance of the foot-bone. In its passage through the latter, it divides into several branches, which emerge through corresponding apertures on the anterior surface of the foot-bone, and anastomose with those from the opposite side, and with the lateral branches.



The *veins* upon the foot are infinitely more numerous than the arteries. See fig. 4.

In Plate VIII. fig. 1. is a front view of the *bones of the fore-foot of a horse*, in their relative situation, taken, by permission of STRICKLAND FREEMAN, esq. from the beautiful engravings in his "*Observations on the Mechanism of the Horse's Foot*;" a work, in point of elegance and correctness, scarcely equalled by any modern publication.

- a* Shews the pastern bone.
- b* The coronary bone.
- c* The nut, or navicular bone.
- d* The foot, or coffin, bone.
- e* The point of insertion of the tendon of the extensor muscle.

*f* A concavity, to which is attached the ligament that unites the coffin to the coronary bone at *g*.

*h* A continuation of the same concavity to which the cartilage of the coffin bone is attached.

*i i* The upper and lower processes of the coffin bone.

*k k* A groove in the latter, receiving a branch of the principal artery coming round from behind.

*l l* A similar groove, receiving another division of the artery, which passes round the extreme edge of the coffin bone.

Fig. 2. Exhibits a *back view of the bones of the fore-foot*, in their natural situation.

- a* Is the pastern bone.
- b* The coronary bone.
- c* The nut bone.
- d* The coffin bone.
- e* A cavity containing a fatty substance.
- f f* The upper surface of the nut bone, from which two ligaments pass round the lateral depressions in the coronary bone marked *g g*.
- h h* Points of attachment between the ligament uniting the nut and coffin bones.
- i i* Two grooves for the passage of large arteries into the coffin bone.
- k k* The line of insertion of the flexor tendon.

Fig. 3. Exhibits two views of the *cartilages of the horse's foot*.

*A* Is a view of the inner side of the cartilage.

*B* Shews the outside of the same part.

*a a* That part of the cartilage which terminates by a small curve, and over which lie those

parts of the hoof that are called the *bars* or *binders*.

*b* Those parts of the extremity of the cartilages, which are connected to the under surface of the foot bone.

*f f f f* Foramina for the passage of blood-vessels.

Fig. 4. A view of *the horse's foot injected with wax*.

*a a* The large trunks of the principal arteries running down behind the pastern, and accompanied by the distended trunks of the veins *b b*, which return the blood in a contrary direction. The finer divisions are seen beautifully anastomosing with each other in a kind of net-work spread over the sole *c*.

*d* The flexor tendon, commonly called the *back-sinew*.

Fig. 5. A view of the *sensible sole* and *sensible frog* of the horse's foot, separated from the coffin bone, &c.

*a a* The sensible sole.

*b* The sensible frog.

*c c* Returning portions of the laminated structure, of which a front view is shewn in fig. 6.

These parts are highly vascular, and, when injected with size and vermillion, form a beautiful preparation.

It may be useful to observe, of the sesamoid bones, and the navicula, or nut-bone, that the former is connected posteriorly with the lower extremity of the cannon or shank bone. They consist of two small bones, firmly united by means of very strong ligaments: they compose part of the fetlock-joint, having a moveable articulation with the cannon-bone; their external part affords a smooth polished surface for the back-sinews to slide upon, and the same ligament which composes this surface comes round the back-sinews, so as to form a sheath for them, and keep them in their situation. In this sheath a fluid similar to synovia, or joint-oil, is formed, for the purpose of rendering it smooth and slippery, and enabling the tendon to move easily upon it. As these bones project a little, they serve as a pulley for the tendons to slide upon, and afford a considerable mechanical advantage to the flexor muscles of the limb. The nut-bone serves as another pulley for the tendon or back-sinew to move upon: it is connected posteriorly with the coffin-bone and the small pastern, and affords the same kind of polished

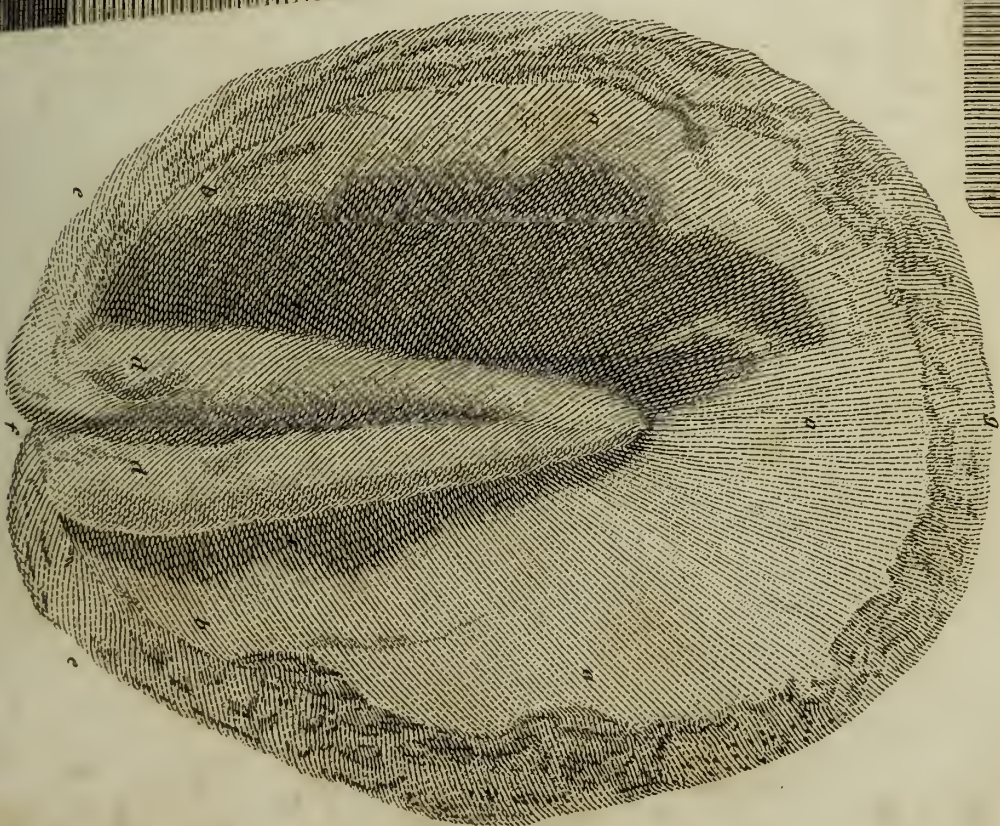


*Fig. 4.*



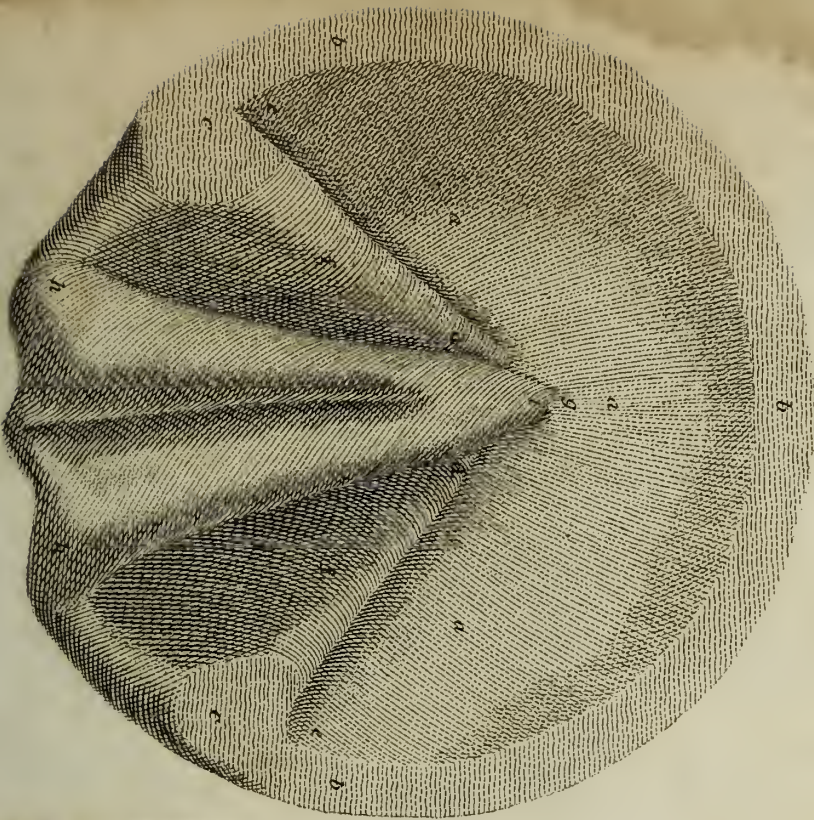
*A Contracted Foot.*

*Fig. 2.*

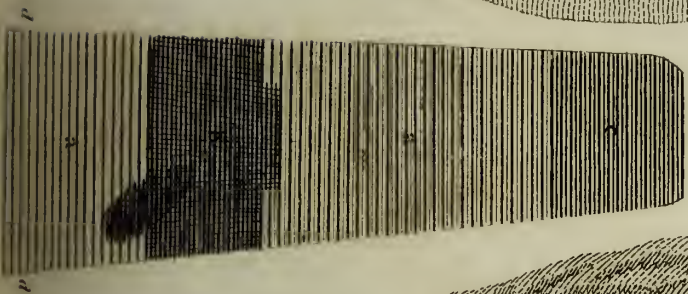


*A Perfect Foot.*

*Fig. 1.*



*Fig. 3.*







surface and sheath for the tendon as we have before described.

Fig. 6. is a front view of the internal or *sensibile* foot.—*a a* The sesamoid bones. *b* The laminated substance. *c* The coronary ring.

What has been said may be sufficient to convey an adequate idea of the anatomical structure of the parts which compose the horse's foot, we shall therefore conclude the subject by referring to figures 7. and 8. in the plate, which shew the relative situation of these parts at one view.

Fig. 7. is a section of the foot from the toe to the heel.—*a* Part of the large pastern bone. *b* The small pastern. *c* The coffin-bone. *d* The navicula, or nut-bone. *e* The frog. *f* The sole. *g* The crust: the line between the crust and coffin-bone represents the laminated substance. *h i* The flexor tendon, or *back-sinew*. *i k* The fatty elastic substance between the frog and back-sinew.

Fig. 8. is a section of the foot in a transverse direction, from Mr. MOORCROFT.

The feet of the inferior animals have not as yet been the subject of anatomical examination; but, as the practice of *shoeing oxen for the plough* is becoming every day more general, it is probable that the attention of veterinarians will soon be called to the diseases which a wrong system of shoeing may occasion even in these animals.

**FOOT DEROBE**, in the manege. A horse's foot has this appellation when it is worn and wasted by going without shoes, so that, for want of hoof, it is a hard matter to shoe him. A horse's foot is said to be worn and wasted, called in French *usé*, when he has but little hoof, and not enough for shoeing.

**FAT FOOT**, in the manege. A horse is said to have a *fat foot*, when the hoof is so thin and weak, that, unless the nails be driven very short, he runs the risk of being pricked in shoeing.

**FORAMEN**, any hole or aperture, either in the bones or soft parts of an animal. The *foramen ovale* is an oval aperture found in the foetus of the human subject and of most quadrupeds, passing through the *septum auricularum* of the heart; by means of which the circulation of the blood is carried on in utero, before the lungs are able to take part in it. See **HEART**.

**FORCEPS**, properly signifies a pair of tongs; but this name is used for an instrument in surgery, calculated to extract any thing out of a wound, &c.

**FOREHAND OF A HORSE**, that part of the

animal which is before the rider. See the articles **CONFORMATION**, **EXTERIOR**, &c.

**FOREHEAD OF A HORSE**. This should be somewhat broad: some would have it a little raised; but a flat one is most beautiful. A horse should have in his forehead what is called a *feather* (see **FEATHER**). It is also to be desired that he should have a **STAR** or **BLAZE** in his forehead.

**FORE-LEGS OF A HORSE**. Those situated next to the chest. See the anatomical plates.

**FORE-THIGH**, a name denoting the arm of a horse.

**FORGE**, the furnace used by a farrier in heating the iron intended to form a horse's shoe. The Veterinary College, with a view of promoting the practice of shoeing of horses on improved principles, have established forges in different parts of London. See the article **FROG**.

**FORME**, a French term for a swelling in the very substance of a horse's pastern, and not in the skin. Solleyfel says, this complaint occurs as well in the hind legs as in the fore; "and, though it be an imperfection not very common, yet it is dangerous, in that it will admit of no other remedy but firing, and taking out the sole; neither can the fire be given to that part without great difficulty and hazard. In the beginning, the *forme* does not exceed half the bigness of a pigeon's egg, but labour and exercise will make it, in time, to grow to about half the bigness of a hen's egg; and the nearer it is situated to the coronet upon the quarters, so much the more dangerous it is." This seems to be nothing more than the disease called a **QUITTOR**.

**FORMULA**, a little form of prescription, such as physicians direct in extemporaneous practice, in distinction from the great forms, which are for the officinal medicines.

**FORNIX**. This is a part of the corpus callosum in the brain, and is so called because of a distant resemblance that it hath to the arches of ancient vaults, when viewed in a particular manner.

**FORTIS AQUA**, a name of the nitrous acid, given because of its dissolving power. In the manufacture of soap, the caustic *alkaline* lixivium is called also the *strong water*. See **ACIDS**.

**FOTUS**, the same as **FOMENTATION**.

**FOUL-FEEDERS**. See the article **APPETITE**.

**FOUL IN THE FOOT**. See **CATTLE**.

**FOUNDER**, a disease to which horses are



subject, after being ridden violently, and afterwards exposed to sudden cold, or washed with cold water. Two kinds of founder have been described; namely *chest-founder* (see CHEST-FOUNDER), and founder in the *feet*. There is, however, no good reason for this distinction, as will appear from the following account, given by Mr. Clark, of the symptoms that take place in the different stages of this disorder, together with the circumstances that have appeared on dissecting those horses that have died of it.

The founder, he says, always proceeds from cold too suddenly applied to the body, and whether it be from a current of cold air, or from plunging the body into cold water, when over-heated, the effects are the same. The symptoms at first are these: when the horse begins to cool, he appears very stiff and feeble in his fore quarters, and, when forced to move forwards, he collects his body, as it were, into a heap, and brings his hind feet as far forward under his body as he possibly can, in order to remove the pressure of the weight of his body from the fore legs and feet; at the same time, he sets his fore feet to the ground with seeming great pain; his fore parts are extremely hot, the legs considerably swelled, and evidently painful to the animal when touched; a violent fever succeeds, which, if not properly treated, terminates in death, or, if the horse survives the shock, in incurable lameness. On dissecting the legs and shoulders of those horses that have died, after a few days' illness, of this disorder, the blood is generally found extravasated, the parts having a black appearance, especially between the skin and the flesh. The same blackness is likewise observed in the cellular membrane, between the interstices of the muscles and tendons; the texture of the vessels too is destroyed, and their substance mortified.

The following case was communicated to Mr. Clark by a very judicious farrier in London. A gentleman, being eighteen miles distant from London, was anxious to be in town before it was dark. He rode his horse very hard through a deep snow, during a severe frost. When the horse was suppered up, after being well rubbed over, he lay down, and was found in the same situation next morning, but unable to rise, or stand when up. On the third day, both his fore hoofs fell off. This was a founder of the very worst kind. The excessive coldness of the snow, to which his hoofs and legs had been so long exposed, when they were over-heated, produced the effects

above related in the case of founder. The violence of the inflammation that had taken place within the hoof had destroyed the texture of the vessels, &c. Hence, all manner of connection between the hoof and internal parts of the foot being destroyed, they became loose, and fell off.

This fact, and the reasoning upon it, may, perhaps, serve to explain a remarkable circumstance which happened to a horse in one of the mail-coaches. It took place at the time when unusual expedition was used in the conveyance of the mail, and in the depth of winter, when there was much ice and snow on the ground. This very spirited animal *lost both his fore hoofs* in the performance of his task, and yet *went through to the end of the stage*, till which time this cruel circumstance was not discovered, nor any thing beyond a slight degree of lameness in his gait observed by the coachman. Was this produced by a mortification of the parts connecting the hoof? And was the insensibility of the naked foot afterwards to be accounted for in the same way? Unluckily, it is not known what was the animal's state previous to his being put to the coach, nor (what is very probable, as being the practice of the road) whether or not his legs were *dashed with cold water* midway on the journey. The poor animal was, of course, destroyed.

Plunging horses into cold water, when they are over-heated, Mr. Clark observes, has the effect of weakening them, as would appear from the following observation, communicated to him by a great sportsman, who, at the same time, had considerable skill and acquaintance with horses. This gentleman asserts, that, in hunting, when horses are *over-heated*, and *obliged to go through deep water*, especially if they are obliged to *swim*, they soon after become faint, jaded, and tired. This fact is well worth the place assigned it.

It is foolishly urged by some people, that they have known horses plunged into cold water, when they were over-heated, and likewise exposed to the inclemency of the coldest weather, without any of these bad consequences. This will be readily granted; but the reason is obvious. It depends on certain circumstances of predisposition and habit of body in which the animal may be at the time of making the experiment. A veteran horse, hardened by labour and other habitual severities, will bear such kind of treatment, whilst a pampered delicate animal would inevitably fall a sacrifice to it.

**FOUR CORNERS**, in the manege, or, *to work upon the four corners*, is to divide, in imagination, the volt, or round, into four quarters; so that, upon each of these quarters, the horse makes a round or two in a trot or gallop; and, when he has done so upon each quarter, he has made the four corners.

**FOWLS**, a description of animals well known as an article of human sustenance. Under this name are usually comprised birds of the larger class, whether frequenting the land or the water, such as geese, ducks, turkeys, and what are called the gallinaceous tribe. As being serviceable to man, the diseases of these creatures are not unworthy of our attention, though their inferior importance may occasion our conferring on them only a small and incidental share of it. Nothing can be a better foundation for this pursuit than a general knowledge of the structure of domestic birds; and as no subject of comparative anatomy can want importance in the eyes of the veterinarian, we shall occupy some little space in detailing Dr. Munro's account of the anatomy of the cock, which may serve as an instance for the rest.

Though birds of this kind live upon food somewhat similar to that of man, yet, as they have no teeth to separate or break down this food, we should find something to compensate for the want of teeth, something remarkable in the organs of digestion: the doctor therefore begins with these parts.

The œsophagus of this creature runs down its neck, somewhat inclined to the right side, and terminates in a pretty large membranous sac, which is the ingluvies or crop, where the food is macerated and dissolved by a liquor separated by the glands, which are easily observed every-where on the internal surface of this bag. The effect of this maceration may be very well observed in pigeons, who are sometimes in danger of being suffocated by the pease, &c. they feed upon, swelling to such an immense bulk in their ingluvies, that they can neither get them upwards nor downwards. But the fowl may be preserved by opening the sac, taking out the pease, and sewing up the wound.

The food getting out of this sac, goes down by the remaining part of the œsophagus into the ventriculus succenturiatus, or infundibulum Peyerii, which is a continuation of the gullet with more numerous glands, which separate a liquor to dilute the food still more, which at length gets into the true stomach or gizzard, ventriculus callosus, which consists of two very strong muscles, covered externally with a tendinous aponeurosis, and lined on the inside by

a very thick firm membrane, which we evidently discover to be a production of the cuticula. This might have been proved in some measure *à priori*, from taking notice, that this membrane, which in chicks is only a thin slight pellicle, by degrees turns thicker and stronger the more attrition it suffers: but there is no other animal substance, so far as we know, which grows more hard and thick by being subjected to attrition, excepting the cuticula. Hence may be drawn some kind of proof of what has been affirmed concerning the tunica villosa of the stomach and intestines in the human body, viz. that it was in part a continuation of the epidermis; nay, all the hollow parts of the body, even arteries, veins, &c. seem to be lined with a production of this membrane, or one analogous to it. The use of the internal coat of the stomach of fowls is to defend the more tender parts of that viscus from the hard grains and little stones those creatures take down. The use of the gizzard is to compensate for the want of teeth; and it is well fitted for this purpose from the great strength it possesses.

The digestion of these animals is performed merely by attrition, as is evinced by many experiments; and it is further assisted by the hard bodies they swallow. We see them daily take down considerable numbers of the most solid rugged little flints they find; and these can serve for no other purpose than to help the trituration of their aliments. After these pebbles, by becoming smooth, are unfit for this office, they are thrown up by the mouth. Hence fowls long confined, though ever so well fed, grow lean, as it has been supposed, for want of these stones to help their digestion. Spallanzani, however, found that pebbles are not at all necessary to the trituration of the food of these animals. At the same time he does not deny, that, when put in motion by the gastric muscles, they are capable of producing some effect on the contents of the stomach; but is inclined to believe, that they are not sought for and selected by *design*, but because they frequently *happen to be mixed* with the food.

The duodenum begins pretty near the same place at which the œsophagus enters; yet, notwithstanding the vicinity of these two tubes, the aliments are in no danger of getting out before they are perfectly digested, by reason of a protuberance, or septum medium, betwixt the orifices; and in those creatures that have such a strong muscular stomach, it is a matter of great indifference whether the entry of the œsophagus or pylorus be highest, provided that the entry



from the œsophagus does not allow the food to regurgitate, since the force of the stomach can easily protrude it towards the duodenum. This gut is mostly in the right side, and hangs pendulous in the abdomen, having its two extremities fixed to the liver. The ductus choledochus enters near its termination, where it mounts up again to be fixed to the liver; and left, by the contraction of the intestines, the bile should pass over without being intimately blended with the chyle, that duct enters downwards, contrary to the course of the food, and contrary to what is observed in many other animals. But still the general intention is kept in view, in allowing these juices the fairest chance of being intimately blended with the food.

The small intestines are proportionally longer than those of carnivorous birds, for the general cause already assigned. At the end of the ilium they have two large intestina cœca, one on each side, four or five inches long, coming off from the side of the rectum, and ascending; and we find them containing part of the food: these serve as reservoirs to the feces, which, after some remora, there regurgitate into what soon becomes the rectum; which, together with the excretories of urine and organs of generation, empties itself into the common cloaca. The small intestines are connected by a long loose mesentery, which has little or no fat accompanying the blood-vessels, there being no hazard of the blood's being stopped.

The pancreas in this creature lies betwixt the two folds of the duodenum, and sends two or three ducts into this gut, pretty near the biliary.

The spleen is here of a round globular figure, situated between the liver and stomach; and betwixt these and the back-bone it enjoys the same properties as in other animals, viz. large blood-vessels, &c. All its blood is sent into the vena portarum, and has a perpetual conflux. It has no excretory, so far as we know. The liver is divided into two equal lobes by a pellucid membrane, running according to the length of their body: and hence we may observe, that it is not proper to that bowel to lie on the right side; which is still more confirmed by what we observe in fishes, where the greatest part of it lies on the left side.

The shape of the gall-bladder is not much different from that of quadrupeds; but it is thought to be longer in proportion to the size of the animal, and is further removed from the liver.

The principal difference to be remarked in

the heart is the want of the valvulæ tricuspidæ, and their place being supplied by one fleshy flap.

The lungs are not loose within the cavity of the thorax, but fixed to the bone all the way; neither are they divided into lobes, as in those animals that have a large motion in their spine. They are two red spongy bodies, covered with a membrane that is pervious, and which communicates with the large vesicles or air-bags that are dispersed over their whole abdomen; which vesicles, according to Dr. Monro, serve two very considerable uses. The one is to render their bodies specifically light, when they have a mind to ascend and buoy themselves up when flying, by distending their lungs with air, and also straiten their trachea arteria, and so return the air. Secondly, they supply the place of a muscular diaphragm and strong abdominal muscles, producing the same effects on the several contained viscera as these muscles would have done, without the inconvenience of their additional weight, and conducting as much to the exclusion of the egg and feces.

The late Mr. Hunter made some curious discoveries relative to these internal receptacles of air in the bodies of birds. Some of them are lodged in the fleshy parts, and some in the hollow bones; but all of them communicate with the lungs. He informs us, that the air-cells which are found in the soft parts have no communication with the cellular membrane, which is common to birds as well as other animals. Some of them communicate immediately with each other; but all of them by the intervention of the lungs as a common centre. Some of them are placed in cavities, as the abdomen; others in the interstices of parts, as about the breast. The bones which receive air are of two kinds; some of them divided into innumerable cells, others hollowed out into one large canal. They may be distinguished from such as do not receive air, by having less specific gravity, by being less vascular, by containing little oil, by having no marrow nor blood in their cells, by having less hardness and firmness than others, and by the passage for the air being perceivable.

The mechanism by which the lungs are fitted for conveying air to these cavities is, their being attached to the diaphragm, and connected also to the ribs and sides of the vertebræ. The diaphragm is perforated in several places by pretty large holes, allowing a free passage of air into the abdomen. To each of these holes is attached a distinct membranous bag, thin and transparent. The lungs open at their anterior

part into membranous cells, which lie upon the sides of the pericardium, and communicate with the cells of the sternum. The superior parts of the lungs open into cells of a loose network, through which the trachea and œsophagus pass. When these cells are distended with air, it indicates passion, as in the case of the turkey-cock, pouting-pigeon, &c.

These cells communicate with others in the axilla, and under the large pectoral muscle; and those with the cavity of the os humeri, by means of small openings in the hollow surface near the head of that bone. Lastly, the posterior edges of the lungs have openings into the cells of the vertebræ, ribs, os sacrum, and other bones of the pelvis, from which the air finds a passage to the cavity of the thigh-bone.

Concerning the use of these cavities the author conjectures, that they are a kind of appendage to the lungs; and that, like the bags continued through the bellies of amphibious animals, they serve as a kind of reservoirs of air. They assist birds during their flight, which must be apt to render frequent respiration difficult. He further insinuates that this construction of the organs of respiration may assist birds in singing; which, he thinks, may be inferred from the long continuance of song between the breathings of a canary-bird. On tying the trachea of a cock, the animal breathed through a canula introduced into his belly; another through the os humeri, when cut across; and a hawk through the os femoris. In all these cases the animals soon died. In the first, Mr. Hunter ascribes the death to an inflammation of the bowels; but in the last he owns it was owing to difficult breathing. What took place, however, was sufficient to shew that the animals really did breathe through the bone.

When we examine the upper end of the trachea, we observe a rima glottidis with muscular sides, which may act in preventing the food or drink from passing into the lungs; for there is no epiglottis, as in man and quadrupeds.

The trachea arteria, near where it divides, is very much contracted; and the voice is principally owing to this contraction. If you listen attentively to a cock crowing, you will be sensible that the noise does not proceed from the throat, but deeper; nay, this very pipe, when taken out of the body, and cut off a little after its division, and blown into, will make a squeaking noise, something like the voice of these creatures. On each side, a little higher than this contraction, there is a muscle arising from their sternum, which dilates the trachea.

The cartilages, of which the pipe is composed in this animal, go quite round it; whereas, in man and quadrupeds, they are discontinued for about one fourth on the back part, and the intermediate space is filled up by a membrane. Neither is the trachea so firmly attached to their vertebræ as in the other creatures we have examined. This structure we shall find of great service to them; if we consider, that, had the same structure obtained in them as in us, their breath would have been in hazard of being stopped at every flexion or twisting of their neck, which they are frequently obliged to.

In place of a muscular diaphragm, this creature has nothing but a thin membrane connected to the pericardium, which separates the thorax and abdomen. But, besides this, the whole abdomen and thorax are divided by a longitudinal membrane, or mediastinum, connected to the lungs, pericardium, liver, stomach, and to the fat lying over their stomach and guts, which is analogous to an omentum, and supplies its place.

The lymphatic system in birds consists, as in man, of lacteal and lymphatic vessels, with the thoracic duct. The lacteals indeed, in the strictest sense, are the lymphatics of the intestines; and, like the other lymphatics, carry only a transparent lymph; and instead of one thoracic duct, there are two, which go to the jugular veins. In these circumstances, it would seem that birds differ from the human subject, so far at least as we may judge from the dissection of a goose, the common subject of this inquiry, and from which the following description is taken.

The lacteals run from the intestines upon the mesenteric vessels: those of the duodenum pass by the side of the pancreas; afterward they get upon the cœliac artery, of which the superior mesenteric is a branch. Here they are joined by the lymphatics of the liver, and then they form a plexus which surrounds the cœliac artery. Here also they receive a lymphatic from the gizzard, and soon after another from the lower part of the œsophagus. At the root of the cœliac artery they are joined by the lymphatics from the glandulæ renales, and near the same part by the lacteals from the other small intestines, which vessels accompany the lower mesenteric artery; but, before they join those from the duodenum, receive from the rectum a lymphatic, which runs from the blood vessels of that gut. Into this lymphatic some small vessels from the kidneys seem to enter at the root of the cœliac artery. The lymphatics of the lower extremities probably join those from



the intestines: At the root of the cœliac artery and contiguous part of the aorta, a net-work is formed by the vessels above described. From this net-work arise two thoracic ducts, of which one lies on each side of the spine, and runs obliquely over the lungs to the jugular vein, into the inside of which it terminates, nearly opposite to the angle formed by the vein and this subclavian one. The thoracic duct of the left side is joined by a large lymphatic, which runs upon the œsophagus. The thoracic ducts are joined by the lymphatics of the neck, and probably by those of the wings, where they open into the jugular veins. The lymphatics of the neck generally consist of two large branches, on each side of the neck, accompanying the blood-vessels; and these two branches join near the lower part of the neck, and form a trunk which runs close to the jugular vein, and opens into a lymphatic gland; from the opposite side of this gland a lymphatic comes out, which ends in the jugular vein.

On the left side, the whole of this lymphatic joins the thoracic duct of the same side; but, on the right one, part of it goes into the inside of the jugular vein a little above the angle; whilst another joins the thoracic duct, and with that duct forms a common trunk, which opens into the inside of the jugular vein, a little below the angle which that vein makes with the subclavian. This system in birds differs most from that of quadrupeds, in the chyle being transparent and colourless, and in there being no visible lymphatic glands, neither in the course of the lacteals, nor in that of the lymphatics of the abdomen, nor near the thoracic ducts.

The kidneys lie in the hollow excavated in the side of the back-bone, from which there is sent out a blueish-coloured canal running along by the side of the vas deferens, and terminating directly in the common cloaca. This is the ureter, which opens by a peculiar aperture of its own, and not at the penis. Fowls having no vesica urinaria, it was thought by some they never passed any urine, but that it went to the nourishment of the feathers: but this is false; for that whitish substance that you see their greenish feces covered with, and which turns afterwards chalky, is their urine. Let us next consider the organs of generation of both sexes, and first those of the male.

The testicles are situated one on each side of the back-bone; and are proportionally very large to the creature's bulk. From these run out the vasa seminifera; at first straight; but after they recede further from the body of the testicle, they acquire an undulated or convoluted form,

as the epididymis in man. These convolutions partly supply the want of vesiculæ seminales, their coition being at the same time very short: these terminate in the penis, of which the cock has two, one on each side of the common cloaca, pointing directly outwards. They open at a distance from each other, and are very small and short; whence they have escaped the notice of anatomists, who have often denied their existence. In birds there is no prostate gland. This is what is chiefly remarkable in the organs of the male.

The racemus vitellorum, being analogous to the ovaria in the human subject, are attached by a proper membrane to the back-bone. This is very fine and thin, and continued down to the uterus. Its orifice is averse with respect to the ovaria; yet notwithstanding, by the force of the orgasmus venereus, it turns round and grasps the vitellus, which in its passage through this duct, called the infundibulum, receives a thick gelatinous liquor, secreted by certain glands. This, with what it receives in the uterus, composes the white of the egg. By this tube then it is carried into the uterus. The shell is lined with a membrane; and in the large end there is a bag full of air, from which there is no outlet.

The uterus is a large bag, placed at the end of the infundibulum, full of wrinkles on its inside; here the egg is completed, receiving its last involucre, and is at last pushed out at an opening on the side of the common cloaca. From the testes in the male being so very large in proportion to the body of the creature, there must necessarily be a great quantity of semen secreted; hence the animal is salacious, and becomes capable of impregnating many females. The want of the vesiculæ seminales is in some measure supplied by the convolutions of the vasa deferentia, and by the small distance betwixt the secerning and excretory organs. The two penes contribute also very much to their short coition; at which time the opening of the uterus into the cloaca is very much dilated, that the effect of the semen on the vitelli may be greater. A hen will of herself indeed lay eggs; but these are not impregnated, and yet appear entirely complete, except that the small black spot, which comes afterwards to be the rudiments of the chick, is not here to be observed.

After having observed the contents of the abdomen and thorax, we next proceed to examine the parts about the neck and head. These creatures, as was observed of fowls in general, have no teeth. Some, indeed, have an appearance of teeth; but these are only small serræ rising out from the mandible, without any

socket, &c. which would have been needless, as they swallow their food entire. But their tongue is made pretty firm, lest it should be hurt by the sharp points of the grain they feed on. It is of a triangular figure, and pointed before; and as by their depending posture their meat is in hazard of falling out of their mouths, to prevent this there are several small pointed papillæ standing out upon their tongue and palate, with their points inclined backwards, allowing an easy passage to the food, but hindering its return.

We have here no *velum palatinum*, *uvula*, or *epiglottis*; and in place of two large holes opening into the nose, there is only a long narrow rima supplied with pretty strong muscles, and such another supplies the place of a glottis. The creature has a power of shutting both at pleasure; and the nature of their food seems not only to exempt them from the hazard of its getting into the nose or trachea, but its sharp points would hurt an *uvula*, or *epiglottis*, if they had any. Hence we see with what difficulty they swallow dough, or other sort of food that can be easily moulded into any form. When we examine the upper end of the trachea, we observe a rima glottidis with muscular sides, which may act in preventing the food or drink from passing into their lungs, for there is no *epiglottis* as in man and quadrupeds.

Their cranium is more cellular and cavernous than ours. By this means their heads are light, yet strong enough to resist external injuries; for the enlarging the diameter of bones contributes to their strength. By this cavernous cranium the organ of smelling is supposed to be considerably enlarged; and further, singing birds, as is observed by Mr. Ray and Mr. Derham, have this cavernous structure of the brain still more observable; and we are told that the cavity of the tympanum communicates with the cells: but this seems rather founded on theory than matter of fact. Their brain is covered with the common membranes, but its external surface is not formed into so many gyæ or convolutions as ours. Its anterior part is quite solid, of a cineritious colour, and so far has a resemblance of the corpora striata as to give rise to the olfactory nerves. The whole of it appears to us as imperfect, and we can scarce determine whether there be any thing analogous to a third or fourth ventricle. Neither the corpus callosum, fornix, nates, or testes, &c. can be observed here; which parts therefore cannot be imagined as absolutely necessary for the functions of life, since we find these creatures perform them sufficiently well.

Their organ of smelling is very large, and well provided with nerves; hence they have this sensation very acute. Ravens and other birds of prey give a sure proof of this, by their being able to find out their prey, though concealed from their sight, and at a considerable distance. Those birds that grope for their food in the waters, mud, &c. have large nerves, which run quite to the end of their bills, by which they find out and distinguish their food.

The anterior part of their eyes (instead of having the sclerotic coat continued, so as to make near a sphere as in us) turns all of a sudden flat; so that here the sclerotic makes but half a sphere; and the cornea rises up afterwards, being a portion of a very small and distinct sphere: so that in these creatures there is a much greater difference betwixt the sclerotic and cornea than in us. Hence their eyes do not jut out of their heads, as in man and quadrupeds. As most of these creatures are continually employed in hedges and thickets, therefore, that their eyes might be secured from these injuries, as well as from too much light when flying in the face of the sun, there is a very elegant mechanism in their eyes. A membrane rises from the internal canthus, which at pleasure, like a curtain, can be made to cover the whole eye; and this by means of a proper muscle that rises from the sclerotic coat, and passing round the optic nerve, runs through the *musculus oculi attollens* (by which, however, the optic nerves are not compressed) and *palpebra*, to be inserted into the edge of this membrane. Whenever this muscle ceases to act, the membrane by its own elasticity again discovers the eye. This covering is neither pellucid nor opaque, both which would have been equally inconvenient; but, being somewhat transparent, allows as many rays to enter as to make any object just visible, and is sufficient to direct them in their progression. By means of this membrane it is that the eagle is said to look at the sun. Quadrupeds also have the *membrana nictitans*.

Besides, all fowls have another particularity, the use of which is not so well understood; and that is, a pretty long black triangular purse, rising from the bottom of the eye just at the entrance of the optic nerve, and stretched out into the vitreous humour; and one would imagine it gave some threads to the crystalline. To this the French gave the name of *bourse noire*. This may possibly serve to absorb some of the rays of light, that they may see objects more distinctly without hurting their eyes. It has a connection with the vitreous, and seems to be joined



also to the crystalline humours. If we suppose it to have a power of contraction (which may be as well allowed as that of the iris), it may so alter the position of the vitreous and crystalline humours, that the rays from any body may not fall perpendicularly upon the crystalline; and this seems to be necessary in them, since they cannot change the figure of the anterior part of their eye so much as we can do: and as this animal is exposed often to too great a number of rays of light, so they have no tapetum, but have the bottom of the eye wholly black on the retina; and in consequence of this, fowls see very ill in the dark.

They have no external ear; but in place thereof a tuft of very fine feathers covering the meatus auditorius, which easily allows the different sounds to pass them, and likewise prevents dust or insects from getting in. A liquor is separated in the meatus auditorius, to lubricate the passage. The membrana tympani is convex externally; and no muscles are fixed to the bones of the ear, which are rather of a cartilaginous consistence. Any tremulous motions impressed on the air are communicated in these creatures merely by the spring and elasticity of these bones; so probably, the membrane is not so stretched as in the human ear by muscles. The semicircular canals are very distinct, and easily prepared.

Of the diseases of fowls little has been discovered, and less recorded. Such accounts as present themselves to our notice shall find a place under their proper heads; and we doubt not but the sphere of our knowledge in the rational and humane investigations which every modern veterinarian will think it incumbent on him to pursue, will soon be greatly enlarged. Some account of a worm which infests the wind-pipe in turkeys and chickens will be found under the article WORMS.

FOX-GLOVE. See DIGITALIS.

FRACTURE (from *frango*, to break). The usual division of fractures is that of the French, which is as follows: 1. The *simple fracture*; that is, when one bone is broken in one place only: 2. The *compound fracture*; when a bone is broken in more parts than one, or when two bones that are joined together, as the radius and ulna, are both broken. English surgeons call a *fracture compound* when, with a fracture, there is a dislocation or a wound. There are various other distinctions of fractures, as from their direction, viz. transverse, oblique, longitudinal, &c.

FRÆNUM, signifies a *bridle*, and is used for the membranous ligament under the tongues

of animals. There is also a bridle of the penis, which ties the prepuce to the glans.

FRANKINCENSE, a solid brittle resin, brought to us in little globes or masses, of a brownish or yellowish colour on the outside; internally whitish, or variegated with whitish specks; of a bitterish, acrid, not agreeable taste, without any considerable smell. It is supposed to be the produce of the pine-tree which yields the terebinthina communis, and to concrete on the surface of the terebinthinate juice soon after it has issued from the plant. It is an ingredient in some plasters directed by veterinary writers; but it exceeds common resin in no respect but in price.

FRENZY, or PHRENITIS, in a horse. See the article MADNESS.

FRET, another name for the gripes or colic in horses and other cattle. See COLIC.

FRICITION, a term used by mechanical writers to express that resistance and wearing which arises from the rubbing hard bodies one against another; as also by physicians, for rubbing any part in order to dislodge any obstructed humours, or promote a due motion of the included juices. To animals this is of great service, and may contribute to the prevention, and even the cure, of several diseases, especially such as proceed from a stoppage of insensible perspiration, or an obstruction of the cuticular pores. See DRESSING.

FROG, in the anatomy of the horse, a part of the foot, the form and essential purposes of which, Mr. COLEMAN, professor at the Veterinary College, describes in the following terms.

"The natural frog of the horse," says he, "is placed in the centre of the sole, externally convex, and of a wedge-like form, pointed towards the toe, but expanded as it advances to the heels. In the centre of the broad part there is a fissure, or separation. The frog is connected internally with another frog, of a similar figure, but different in structure. The external frog is composed of soft elastic horn, and totally insensible. The internal frog has sensation, and is much more elastic than the horny frog; and at the extremity of the heels is connected with two elastic substances called cartilages. The toe of the sensible frog is united to the coffin-bone; but more than nine tenths of both frogs are behind the coffin-bone. The toe of the sensible and horny frogs, from their connection with the coffin-bone, are fixed points, and have no motion; but the heels of the frogs being placed posterior to the coffin-bone, and in contact with moveable, elastic, and not fixed or

resisting, substances, a very considerable lever is formed, and whenever the horny frog comes in contact with the ground, it first ascends, and then descends. The pressure of the ground also expands the horny frog, and the sensible frog expands the cartilages, and at the heels and quarters, immediately below the hair, totally governs the direction of the future growth of the crust.

"This ascent of the frog not only, by its wedge-like form, preserves the heels and quarters from contraction, but affords to the horse an elastic spring, and prevents the animal from slipping whenever it embraces the ground. Without any anatomical enquiry into its internal structure and union with other parts, the shape and convexity of the horny frog clearly demonstrates that it was formed to come into contact with the ground; and the more I investigate this subject, the more I am convinced that the use of the frog is to prevent the horse from slipping, to preserve the cartilages and hoof expanded, and, by its motion, to act as an elastic spring to the animal."

Mr. Coleman contends, that Mr. St. Bel, and many others, who suppose that the use of the frog is merely to *serve as a cushion*, or guard, to the tendon of the flexor muscle of the foot, and who, on that account, were disposed rather to *raise the frog from the ground by a thick-heeled shoe*, have been in an error. On the contrary, he maintains it to be a law of nature, that, unless the frog performs its functions, by being allowed to press the ground, it must become diseased. Accordingly, the practice of shoeing very much depends on the functions of the frog being understood.

"If the opinions here advanced respecting its uses be well founded, then it must follow, that paring the frog, and raising it from the ground, annihilates its functions, and ultimately, if not immediately, produces disease; and that exposing the frog to pressure is the only proper method to keep it in health. Moreover, it has from experience been ascertained, that, unless the frog sustain an uniform pressure when at rest, the heels as well as the frog contract, but if that organ be in close contact with the ground, then it spreads and is free from thrushes and canker, and operates as a wedge to keep open the heels of the hoof.

"Granite and other hard substances give no pain to a frog exposed to constant pressure in the stable; but, when above the pavement, it generally becomes contracted, and the sensible frog inflamed, and then one stroke from a projecting stone will produce pain, perhaps lame-

ness, while perpetual perpendicular pressure is attended with salutary effects.

"When the hoof contracts, the frog must also become contracted, and inflammation and a suppuration follows, called a *thrush*. No contraction, however, takes place where the frog is made to receive constant pressure, as the standing perpetually on that wedge increases its growth, presses upward the sensible frog, and expands the cartilages of the hoof. And as the first shoot of the crust at the coronet is very thin, the direction of its fibres will be altogether regulated by the width of the cartilages immediately below the hair at the quarters and heels, and the cartilages will be always more or less expanded, and the hoof more or less circular, as the frog has more or less pressure.

"On that principle," continues Mr. Coleman, "I long since recommended a shoe with *thin heels* as the best formed shoe to bring the frog on the same level; and with great truth I can assert, that, although in some instances, from a sudden misapplication of the thin-heeled shoe to improper feet, I have seen the tendons affected, yet, from all the experience I have since had, and from what I have seen or heard of the practice of others, I know of no instance where the frog, from constant pressure, did not expand and receive great benefit.

"Where the frog is in a morbid state, and unnaturally deprived of perpendicular pressure, it is seldom safe to lower the heels at once, so as to make the frog on a level with the shoe; and, in many cases, it is not possible with any shoes, or even without shoes, to give the frog pressure on smooth surfaces; much less is it practicable for the frog to rest on the ground when shod with common thick-heeled shoes. In the stable, therefore, while at rest, the frog is generally raised above the shoe; and as pressure is essential to its health, particularly when the hoof is exposed to heat, it appeared to me of great importance, in all cases where the heels of the shoe and the frog cannot with safety be made on the same level, to apply an artificial frog (see Plate IX.), to fit and give any degree of pressure, in the stable, to the natural frog, with any shoes. While the horse is in motion, and the hoof exposed to unequal surfaces, the artificial frog should be removed, as the natural frog, out of the stable, will receive frequent pressure with any shoes; but that period is of short duration, when compared to the length of time the horse remains at rest, and the frog raised from the ground.

"Artificial pressure is most particularly



wanted when the heat of the stable operates powerfully to contract the hoof. In all cases, therefore, where the pavement of the stable does not touch the natural frog, an artificial frog is necessary to resist contraction of the hoof, thrushes, and canker. Sand-cracks, also, very generally arise from a contracted hoof, and may be prevented by the artificial frog.

"If the frog does not absolutely rest on the pavement, whatever shoes are employed, the hoof in the stable will be as much disposed to contract as if the frog was raised any greater distance. I wish this fact to be well considered; for it has been supposed that shoes with a flat seat, without pressure to the frog, will prevent contraction. But I am fully convinced, that neither thick nor thin heeled shoes, where the frog is raised above pressure, and exposed to the heat of the stable, can prevent contraction or its effects; and, where the frog receives that pressure, the heels cannot contract even with the most common shoes. For very obvious mechanical reasons, a wedge in the centre of the heels, aided by the pressure from below, must be best calculated to preserve them expanded, or, when the heels are contracted, to force them open. The heat of the stable in all cases tends to contraction of the hoof; but, with common shoes, there is no pressure on the wedge, or other cause to counteract that tendency. The artificial frog, which is intended to cover and give any degree of pressure to the natural frog only, is made of iron. In order to fit the natural frog, it is requisite to ascertain its width, the length of the foot, and the distance between the lower surface of the shoe and the frog. But if the artificial frog be too long, the toe, which is flat and thin, may be shortened; and if the heels of the shoe are higher than the artificial frog, nothing more is requisite than to introduce a quantity of tow between the natural and artificial frog, so as to raise it equal or above the level of the shoe. I have ascertained by experience, that no inconvenience takes place by raising the artificial frog even one quarter of an inch above the shoe; but, in ordinary cases, it should not project more than one sixth of an inch above the surface of the shoe. It may, however, be imagined, that so much perpendicular pressure to the frog would retard rather than increase its growth: but the very reverse is the fact; for, as the frog, when long elevated above the ground, is very generally contracted, this unnatural lateral pressure excites inflammation of the sensible frog, and deprives, in a great degree, the blood-vessels of the power of secreting horn. When the

horny frog is exposed to perpendicular pressure, it gives health, and not disease, to the sensible frog. The blood-vessels secrete their due proportion of elastic horn, and then the cavity of the frog is preserved, expanded, and fully equal to contain the sensible frog, without the smallest degree of lateral pressure.

"It therefore follows, that perpendicular pressure increases the bulk of the frog; while its absence from the ground produces contraction, and lessens its growth."

The following is an explanation of Plate IX. in which Mr. Coleman's PATENT ARTIFICIAL FROG is represented, with other figures that illustrate the subject.

Fig. 1. exhibits a view of the natural hoof of the horse, which is of a circular shape.

*aaa* The external surface of the sole, of a concave form.

*bbb* The inferior edge of the crust.

*cc* The junction of the bars with the crust.

*dd* The points of the bars.

*ee* The sole between the heels of the crust and bars, the seat of corns.

*ff* Two cavities between the sides of the bars and the sides of the crust.

*g* The toe of the frog.

*bb* The heels of the frog.

*ii* The cleft between the heels of the frog, the seat of thrushes.

Fig. 2. A view of the hoof with contracted heels, occasioned by raising the frog above the pressure of the pavement in the stable.

*aaa* The sole.

*bb* The original seat of the bars, but improperly removed by the farrier.

*cc* The original seat of the cavities between the bars and crust, but now, from contraction, become solid horn.

*dd* The heels of the frog very much compressed by the contraction of the hoof.

*ee* The width of the hoof at the heel, not being more than one half of the length from *f* to *g*.

*f* The extremity of the heels of the frog.

*g* The toe of the crust.

Fig. 3. The patent frog, made of cast and wrought iron.

*aa* The lower surface opposite the ground, formed of cast iron.

*b* An irregular cavity for the reception of the elastic spring, fig. 4.

*c* The toe of the patent frog, formed of wrought iron, to be occasionally shortened and

adapted to the length of the foot, and placed under the toe of the shoe, to confine the artificial frog from moving forwards.

*dd* A hole in the heels of the iron frog, for the passage of a strap to buckle at the outside quarter or coronet.

Fig. 4. A flat steel spring to fix the artificial frog in its place.

*a* An irregular projection, to be received into a corresponding concavity in the patent frog.

*bb* The ends of the spring, to be placed under the heels of the shoe opposite *ee* in fig. 1.

"The toe of the artificial frog is intended to be inserted under the toe of the shoe. This effectually fixes the frog forwards; and to prevent backward or lateral motion, an irregular groove is made in the iron frog, to receive a corresponding piece of steel, placed under the heels of the shoe. In general, it is necessary to fix the frog more firmly; and, for that purpose, a hole is necessary, made in the heel of the artificial frog, to receive a strap, and to buckle at the outside quarter below the coronet. And that the artificial frog may give pressure in all cases, with shoes thickened, or turned up for hunting or frost, a variety of frogs are made, to be adapted to particular feet and particular shoes. In cases of thrushes and canker of the frog, where no remedies without pressure are likely to be serviceable, an astringent thrush-powder may be applied between the natural and artificial frog. And in contracted hoofs (or what has improperly been termed chest-foundered), where it may not be advisable to lower the heels equal with the horny frog, the artificial frog is essentially necessary. But, indeed, in every horse where the shoe and frog on a smooth surface are not on the same level, whatever shoes may be used, the iron frog in the stable should be applied; and, in order to fix it with facility, the spring should first be placed under the shoe, and brought backward to the heels of the hoof.

"The toe of the iron frog should then be inserted under the centre of the spring, and pushed as far as the toe of the shoe, while the other hand confines the spring until the centre of the spring meets the centre of the groove. The strap may then be buckled: and, to dislodge the spring and iron frog, after the strap is unbuckled, nothing more is requisite than a small horse-picker introduced into a hole at the bottom of the groove of the iron frog; and the spring being raised above the groove, and car-

ried gently forward, the frog may be withdrawn from under the shoe without the smallest difficulty."

Mr. Coleman, in conclusion, wishes it to be clearly understood, "that, in all cases where the frog and the heels of the shoe are placed on the same level, the patent frog is unnecessary. But where the frog is small, or the pastern joint long, or the action of the animal high, or the heels low, so as to render the application of thin-heeled shoes improper, or when the frog, from any cause, is raised above the ground in the stable, an artificial frog is useful in all such cases, and necessary to resist contraction of the hoof."

To this equally ingenious and candid statement of Mr. Coleman, we are enabled to add our individual testimony as to the soundness of his reasoning, and the great practical utility of his *artificial frog*, which is now very generally adopted in the stables of persons of fashion in the united kingdom, and may be had, at the small price of three shillings, at the Veterinary College, and forges in Grosvenor Mews and Little Moorfields.

FRONTALES, are two muscles in the human subject that lie immediately under the skin of the head, or pericranium, whose fleshy fibres are inserted into the eye-brows; from thence they go straight up the os frontis, and are continued by a long and large aponeurosis to that of the occipitales: they adhere closely to the skin of the forehead, and pull it upwards when they act.

FRONTALIS NERVUS. The fifth pair of nerves from the brain send off their first branch, called *orbitarius*, which is subdivided into three, the first of which subdivisions is the frontal. It spreads on the upper part of the orbit of the eye, on the fat which furrounds the globe of the eye, the musculus elevator palpebræ, &c.

FRONTALIS SINUS, the frontal sinus. There are two of these, one on each side of the nose. They are formed of the separated laminae of the os frontis; they are placed above the orbits at the bottom of the os frontis, on each side the top of the nose; they are lined with the same membrane which lines the nostrils, and they open into them. Sometimes they are wanting.

FRONTALIS VENA, is a branch from the external jugular, forming a vein in the forehead.

FRONTIS OS, the forehead bone. See Plate V. and the description of "*Bones in the Head*" of the horse, under the article BONES.



FRUSH, a name given by farriers to the frog of a horse. See FROG.

FRUSH, or RUNNING FRUSH, or THRUSH. See THRUSH.

FUMIGATION, a useful precaution to be used in stables after any infectious disease. The following is from Dr. Carmichael Smyth. "Immerse a tea-cup into a pipkin of heated sand, put into the tea-cup half an ounce of concentrated vitriolic acid, gently heated, and half an ounce of pure nitre in powder. Stir them together with a glass spatula, until a considerable degree of vapour arise." This has the property of preventing the spread of contagion, and might eventually be of service in case of such a malady occurring at any future period amongst horned cattle.

FUNCTION, in a physiological sense, the duty or office of any particular organ contained in an animal body. On the perfect and uninterrupted exercise of the animal functions depends health; and the object of medicine is to restore them when interrupted or suspended.

FUNDAMENT, the anus (see ANUS). Horses, and most other animals, are liable to a descent or prolapsus of the fundament, or rather of the RECTUM.

"This," Mr. John Lawrence says, "may be occasioned by long-continued looseness or scouring, and horses of a lax and watery constitution are most subject to it. It is produced by long journeys, or hard labour with insufficient nourishment. The defect is frequent with over-driven pigs, which I have often attempted to cure, with very ill success." Solleyfel says, it was sometimes brought on horses, in his time, by docking; probably by *close* docking, in which the irritation of the wounded part extended to the rectum.

In attempting the cure no time ought to be lost. If the gut descend to any great length, and be much swelled and inflamed, wash with lead-water, or a weak solution of alum, and suspend it, repeating the washing till the inflammation is abated; when, with a soft linen cloth, an attempt may be made to return the gut to its proper place. Mr. Lawrence advises, afterwards, to bathe the fundament frequently with the following mixture:

Take Red Port wine,

Camphorated spirits, of each a quarter of a pint;

Extract of lead, forty drops. Mix.

FUNGUS, in surgery, a spongy excrescence which arises in wounds and ulcers, commonly known by the name of *proud flesh*, though often

improperly so called. White swellings are called *fungi* by some authors. In Vogel's Nosology, it signifies a soft oedematous tumour of the joints.

FUNICULUS, is strictly a little rope; but by anatomists applied to some parts having resemblance thereunto in texture, as the umbilical vessels twisted into the navel-string.

FUNIS UMBILICALIS, the navel-string, connecting the foetus with the uterus.

FURFUR, signifies properly husk, or chaff, and therefore is used for scurf or dandruff that grows upon the skin, having some likeness thereunto. Galen, with many since, have termed *psoriasis*, *furfuratio*, such dry scaly eruptions of the skin as are seen in leprosy and saline scorbutic habits.

FURNACE, in chemistry, an instrument contrived to receive the fuel or fire made use of in its operations, and to direct it to the vessel including the matter to be acted on. Of these there are various kinds, which are best learned by inspection.

FURUNCLE (from *furo*, to rage), a phlegmonoid tumour or boil. Celsus describes it to be a pointed tubercle, attended with inflammation and pain, especially when suppurating.

FUSION, is the conversion of metals into fluids, and signifies melting of any thing. To understand this well, it is necessary to consider the causes of solidity and fluidity. The solidity, hardness, or force, by which the parts of the body resist separation, arises from the mutual cohesion of its component parts; which cohesion is but a necessary consequence of the attractive power residing in matter. Now the attractive force, as it is strongest at the point of contact, it is the cause why the cohesion of all bodies is in proportion to the number of points they touch one another in; so that those particles which have least solidity with relation to their surfaces, although they attract the least at distance, yet, when they touch, they cohere most intimately; but, where the cohesion is small, for the contrary reason, as in spherical bodies, whose superficies can only touch in a point, their particles easily give way to every impulse; and whenever they are set in motion, whether by nature or art, fluidity takes place: and how this may be effected by fire, it is not in the least difficult to conceive. Whilst the particles of fire, by their activity and force, insinuate themselves into the substance to be melted, they so divide and break it, that there is a much less contact of parts, and of course a weaker cohesion; and this cohesion may still, by a continuance of the same cause, and further

diminishing the degree of contact, be so far weakened, that it is not sufficient to keep the component parts from rolling over one another, that is, from running into a fluid.

From the rarefaction which is usual in the fusion of these substances, it is evident these parts may be, and actually are, divided and separated from one another by fire; for, unless the fire gained admission between their component parts, so far as to force them into greater distances from one another, and thereby lessen their contacts, there could be no reason assigned for their expanding themselves into a larger space: for experience teaches, that a plate of iron, by being made red hot, increases in all its dimensions. The same is observable in calcining copper.

From this difference of cohesion proceeds all that variety we observe in the fusion of bodies: for such as have least contact of parts soonest give way to the fire; and some will melt away by the warmth of a vapour only, when others, which have a stronger contact, are not to be separated but with difficulty. Upon this account vegetables very easily disunite, minerals slower, and metals slowest of all; and, of the last, those wherein the contact of parts is least, as in lead and tin, most readily melt; but those which are most compact, as gold and silver, are not to be managed but by a violent heat. Now, if the force of cohesion was proportional to the quantity of matter, or to the weight of bodies, we might from statics account for all the variety which occurs in fusion; for, by knowing the specific gravity of a body, we should then know what force is required to melt it. But, because the same quantity of matter may be so variously disposed, that in one body there shall be a much greater contact than in another, though the gravity be equal, or even less, at the same time, therefore the force of cohesion cannot be estimated by gravity; for lead, although more ponderous than most other metals, yet in the fire is

more easily melted than any other: so that it necessarily follows, that in this metal there must be a less cohesion or contact of parts, how much soever it may exceed others in the quantity of its matter.

Bodies, after fusion, return again into a solid mass, upon their removal from the fire, and the cessation of the motion which the fire produced; because their particles are brought nearer to one another by their attractive force, and so compelled to unite. Such as consist of homogeneous and unalterable parts, as wax, gums, and the purer metals, recover their ancient form; for, when the same texture of parts remains in the whole body, it must of course re-assume the same appearance when the separating power ceases to act: but other bodies, whose parts, with respect to density and surface, are extremely different from one another, while some are carried off by the force of heat, and others are changed as to figure and position, must be forced to appear in another form; for they cannot recover their original phases, unless every particle could reinstate itself in that very situation it had before, which may be hindered infinite ways, as may be easily experienced in heterogeneous bodies. Therefore the difference which is observed even in homogeneous bodies, after liquefaction, is no ways to be accounted for but from the changeableness of surface in its parts; for those bodies whose parts constantly retain the same surfaces, never lose their form; but others, by having the surfaces of their parts altered, have a different texture, and put on another appearance.

FUZEE, a name given by farriers to two considerable splints joining from above downwards. Commonly a fuzee rises to the knee, and lames the horse. Fuzees differ from *screws* or *thorough-splints* in this, that the latter are placed on the two opposite sides of the leg. They reckoned a fuzee much more dangerous than a simple splint. See SPLINT.



## G.

**GAIT**, in the manege, a term used for the going or pace of a horse.

**GALACTITES LAPIS** (from γαλα, *milk*), the milk-stone. It seems to be an inferior kind of French chalk. When it is ground down with water, it renders it milky in appearance; whence its name.

**GALANGAL**, the *maranta galanga*, Linn. It is a grassy-leaved plant, which grows in China and in the East Indies. The dried roots are brought into Europe in pieces of about an inch long, and half an inch thick; it is branched, full of knots and joints, with several circular rings; it is of a reddish brown colour on the outside, and of a pale red within.

This root hath an aromatic smell and bitterish hot biting taste; but the heat and pungency prevail more than the bitter. Dr. Lewis observes, that the pungent matter appears to be of the same nature with that of pepper; that it resides not in the volatile oil, but in a more fixed matter. Neumann says, it resembles ginger in its smell, taste, and chemical composition; but that ginger is to be preferred, as it is more agreeable.

There is a galanga major, called *acori radix*; but, as it is weaker and much more disagreeable, it is not used.

**GALBANUM** (from the Hebrew *chalbanah*), called *albetad*, *chalbane*, *gesor*. It is the concrete gummy-resinous juice of an evergreen plant, with leaves like those of anise, growing in Syria, the East Indies, and Ethiopia. This plant is named *ferula Africana*, *oreoselinum Africanum*, *anifum fruticosum galbauiferum*, and *anifum Africanum fructifceus*, &c. *ayborzat*. The plant is the *bubon galbanum*, or the *bubon foliolis rhombeis dentatis glabris striatis, umbellis paucis*; Class PENTANDRIA, Ord. DIGYNIA, Linn. Gen. Plant. 350. Lovage-leaved bubon. The gum is brought to us in pale-coloured semitransparent, soft, tenacious masses, of different shades, from white to brown; the better sorts of which, on being opened, appear composed of clear whitish

tears, often intermixed with little stalks or seeds of the plant. It partakes more of the resinous than of the gummy quality, though it is nearly all soluble in water. It hath a strong unpleasant smell, and bitterish warm taste, is unctuous to the touch, and softens in the fingers.

In medical virtue and sensible qualities it resembles the gum ammoniacum, but is less efficacious than it in asthmas, though more efficacious than it in spasmodic disorders. When assa-fœtida is too strong, galbanum is usually tried; and, if that disagrees, ammoniacum. It may be said to hold a middle place between the two, though it is less antispasmodic than assa-fœtida, and not so powerful an expectorant as the ammoniacum. Dr. Cullen says, by itself it has little power, but serves to afford a variety, so requisite in the use of antispasmodics.

A mixture of spirit of wine two parts, with one part water, dissolves all but the impurities, which are commonly in considerable quantities.

Great part of the virtue of galbanum consists in its essential oil, which is carried up in distillation either with water or with spirit; whence great care is required in purifying it. For making of plasters, and such-like purposes, the best method is to expose it in winter to a sharp frost, and whilst it is brittle to powder it: thus the impurities may in some measure be separated in the scarce. For internal uses, it is best managed by including it in a bladder, and keeping it in hot water until it is soft enough to be strained by pressure through an hempen cloth.

Besides the essential oil yielded by distillation with water, an empyreumatic oil is obtained, by distilling in a retort without mixture. This empyreumatic oil is of a fine blue colour, but changes in the air to a purple.

**GALEA**, in anatomy, the name of the amnios. In surgery, a bandage for the head is thus called. In botany, the upper lip of a labiated flower is called its *galea* or *crest*. Among

diseases, it is by analogy a name for a species of head-ach, which surrounds the head like an helmet.

GALENA (from γαληνη, *a calm*). It was a name of the Venice treacle formerly. It is the name of a lead ore, in which is a little silver. According to some, it is the name of *plumbago*, or *molybdæna*. Some say, that no metal can be extracted from it; and others say it is an ore of zinc, but mixed with various other substances. This last is the most proper assertion.

GALENIC MEDICINE, is that practice of medicine which conforms to the rules of Galen, and runs much upon multiplying herbs and roots in the same composition, though seldom torturing them otherwise than by decoction, in opposition to chemical medicine, which, by the force of fire, and a great deal of art, fetches out the virtues of bodies, chiefly mineral, into a small compass. Hence the terms *chemical* and *galenic*, applied to medicines.

GALL, in anatomy, called also *bile* (see *BILIS*), a yellow bitter juice, secreted from the blood by the liver, and deposited in a peculiar reservoir, called the *gall-bladder*, in most animals.

The horse, however, has no gall-bladder, yet he has the gall-duct, which is very large; and horses abound with gall as much as any other creature, and are sometimes in danger, either when the passage of the bile is obstructed, or when the discharge of it happens to be too profuse. Moreover, had a horse a gall-bladder, as some other animals, it might be greatly exposed to accidents by the violence and quickness of his motions. Gall is separated by its proper vessels, and conveyed directly into the duodenum, about ten or twelve inches below the lower orifice of the stomach. This liquor is secreted from the blood which is sent to the liver.

The use of the bile, therefore, thus mixed with the aliment, is to dissolve the oily parts, intimately mix them with the watery, to correct viscidities, and stimulate the muscular fibres of the intestines to perform their peristaltic motion; it also obtunds and corrects the saline and acrimonious parts of the chyle, dissolves such as were coagulated, and prepares the lacteals for the reception of the chyle. It excites the appetite, and assimilates crude or unprepared aliment, and therefore acts a principal part in digestion.

NAVEL-GALL. See the article *NAVEL-GALL*.

WIND-GALL. See the article *WIND-GALL*.

GALLATURA, that part of the white, of an egg which is more dense and close than the rest.

GALL-BLADDER, *vesica fellis*, a bag or receptacle attached to the liver in the human and many brute subjects, though *not* in the horse. Its office is to collect the bile as it is produced from the liver, and, by an occasional contraction of its fibres, press it out, through its duct, into the duodenum, in such quantities as may be needful. See the article *GALL*.

GALLED, *i. e.* excoriated. See *EXCORIATION*.

GALLS, or GALL-NUTS (from *Gallus*, a river in Bythinia, from whence they were brought). These are the productions of the *quercus robur*, *foliis oblongis glabris sinuatis*; *lobis rotundifoliis glandibus oblongis*, AITON, Hort. Kew. Class MONŒCIA, Ord. POLYANDRIA, Linn. Gen. Plant. 1070. A gall is called *cefsis*, or *cifis*.

They are hard round excrescences, *nidi cynipidis*, found in the warmer countries on the oak-tree. They are produced from the puncture of an insect, and affording a lodgment for its young, until they are capable of eating a passage through; the tear which issues from the wound, gradually increased by accessions of fresh matter, forms a covering to the eggs and succeeding insects. Those galls which have no hole are found to have the dead insect remaining in them. Two sorts are distinguished in the shops: one said to be brought from Aleppo, called *Oriental* or *Aleppo nut*, or *galla spinosa*; the other from the southern parts of Europe, called *European galls*. The former are generally of a blueish or greyish or blackish colour, and verging to a blue, unequal in their surface, hard to break, and of a close texture; the others are of a pale brownish or whitish colour, smooth, round, easily broke, less compact, and of a much larger size. The two sorts differ in strength, but in other respects are of the same quality.

Galls are a strong astringent, supposed to be one of the strongest in the vegetable kingdom. They have no peculiar smell or taste; their medical character is simple astringency. Both water and spirit take up nearly all their virtue. The spirituous extract is the strongest preparation; but the simple powder is as good as any other mode of administering them. The dose of the powder is from a few grains to a drachm, in human diseases.

They are sometimes used in veterinary medicine, and are certainly among the most powerful of the vegetable astringents.



**GALLINAGINIS CAPUT** (from *gallinago*, a woodcock); also *galli gallinacei caput*. When the prostate gland is cut open, we discover the eminence called *caput gallinaginis*. It is thick behind, and slender before; on each side of this eminence appear the orifices of the vesiculæ feminales in men.

**GALLING OF A HORSE'S BACK.** Good horses are often subject to gall upon their backs, and the utmost care ought to be taken to prevent or cure it. The best method of prevention is to take a hare's skin, well furnished with hair, and fit it neatly beneath the pannel of the saddle, so that the hairy side may be next the horse: this does not harden by sweat, but keeps the horse from galling. This method should never be omitted with horses that are newly cured of it, as it will prevent the same happening again. In long journeys, when horses are subject to gall, it is always proper to take off the saddle immediately, and examine whether the back be at all pressed, or pinched in any part. It will be well to re-examine it after an hour or two, to see what has happened; for often the part hurt will not shew it at first, but will swell very violently afterwards. In this case, where the skin is not fretted, but a swelling comes on, a bag of coarse cloth should be filled with warm cow-dung, and tied upon the swelling, which will not only prevent it from growing worse, but will take it often quite down; or the swelling may be well rubbed with brandy and vinegar, laying on some rags soaked in it. If the skin be broken, a plaster of any mild salve must be applied.

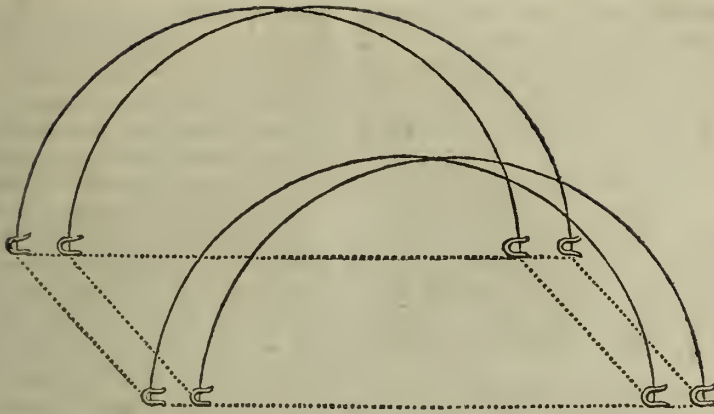
**GALLOP**, a well-known pace to which the horse is trained, and of which many kinds are enumerated, but two only worthy of regard, to wit, the *hand* gallop and the *full* gallop. Even these distinctions, however, are founded on the different degrees of velocity in which the animal is impelled, rather than on any peculiarity in the pace itself. In the galloping, the horse leads with one fore-leg somewhat advanced, but not so much beyond the other as happens in the canter (see **CANTER**); and, when he is urged to his utmost speed, his legs are almost equally placed. The fleetest horses, when gal-

loping, carry their bodies perfectly in a horizontal posture, and the fewer curves or successive arches are described, the more rapid of course is their progress.

Mr. RICHARD LAWRENCE justly observes, that, in every instance of progression, all bodies are retarded in proportion as they depart from a right line, whether this be horizontally or perpendicularly. "None but horses of great powers," says he, "are able to gallop in this form; for, to supply the want of undulation in the body, they must bend their limbs in a greater degree; and hence the necessity of their standing perfectly on the centre of gravity. The action of the gallop being more extended than the canter, it is necessary that the horse should have his head more at liberty; for a horse cannot gallop out with his head reined up. Thus, in the swift gallop, he carries his head and neck nearly horizontal."

We are no less ready to agree with that writer on the common practice of grooms and jockeys, who teach horses to *pull against them* in performing the gallop. To this they are led by the support it affords them when they stand upright in the stirrups; but the bad effects of constant pressure, in deadening the horse's mouth, by rendering it callous, are sufficient to demonstrate the pernicious tendency of this custom. "When the horse thus bears on the hand," says Mr. Lawrence, "a considerable portion of the power which should be concentrated in his body, for the purpose of maintaining his equilibrium, is directed forwards; and hence he becomes much more liable to fall, in case of meeting with any casual obstacle." The power which the rider has, in this case, must be exactly in proportion to the degree of sensibility with which the horse's mouth is endued; and when this is rendered inconsiderable by the hardness of the parts, it is not surprising if accidents happen and the animal is unruly.

In his account of the proportions of **ECLIPSE**, Mr. St. Bel has exhibited six complete actions of the gallop of that celebrated racer, each action covering twenty-five feet. The six, taken together, offer a scale of one hundred and fifty feet.



The same writer describes the gallop as consisting of "a repetition of bounds or leaps, more or less high, and more or less extended, in proportion to the strength and lightness of the animal."

"The common gallop," he says, "contains three times. If the horse, for example, begins his gallop on the right, the left hind-foot beats the *first* time; the right hind-foot and left fore-foot beat the *second* time together; and the right fore-foot beats the *third*."

"In the gallop of four times, the feet strike the ground in the same order as in walking. Supposing the horse galloping on the right, the left hind-foot beats the first time, the right hind-foot beats the second, the left fore-foot beats the third, and the right fore-foot beats the fourth. This gallop is regular, but confined, and but little adapted for speed."

"The gallop at two times is faster than at three or at four; the legs follow in the same order as in the trot, so that the two sounds are given by the left hind-foot and right fore-foot striking the ground together, and by the right hind-foot and left fore-foot also striking the ground together."

In galloping, the horse may lead with which fore-leg he pleases; the most usual way is that with the right: but, whichever it be, the hind-leg of the same side must follow next; otherwise the legs are said to be disunited, and the gallop to be *false*. To remedy this disorder, the rider must stay the horse a little on the hand, and help him with the spur a little on the contrary side to that on which he is disunited. As for example, if he be *disunited* on the right side, he should help him with the left spur, by staying him as before on the hand a little, and also helping him at the same time with the calves of the legs.

In a circle, the horse is confined always to

lead with his fore-leg within the turn, otherwise he is said to gallop *false*; but here too the hind-leg of the same side must follow.

Those who make trial of the gallop should observe if the horse performs it equally, and should push him on somewhat hard, that they may know by his stop whether he has strength and vigour, and if he also be sensible of the spur.

In the manege many varieties of this pace were formerly enumerated, but these are not worth detailing.

**GALLOPADE**, in the manege, a hand-gallop, in which a horse galloping upon one or two treads is well united. The difference between working with one haunch in, galloping upon volts, and managings upon *terra a terra*, is, that, in the latter, the two haunches are kept subject, and also are within the volt; but, in galloping a haunch in, only one is kept subject.

*To gallop united*, upon the right foot, is, when a horse that gallops out, having led with either of his fore-legs, continues to lift that same leg always first; so that the hinder-leg on the side of the leading fore-leg must likewise be raised sooner than the other hind-leg. For instance, if the right fore-leg leads before the left, then the right hind-leg must likewise move sooner than the left hind-leg; and in this order must the horse continue to go on.

*To gallop false*, to disunite, to gallop on the false foot, is, when the horse, having led with one of the fore-legs, whether the right or left, does not continue to make that leg always set out first, nor to make the hind-leg of the same side with the leading leg to move before its opposite hind-leg; that is to say, the orderly going is interrupted.

A horse that gallops false gallops with an unbecoming air, and incommodes the rider. If



the horse gallops false, put him upon keeping the right foot and uniting, by bringing him to with the calves of your legs, and then with the spur that is opposite to the side on which he disunites. If he disunites to the right, prick him with the left heel.

**GAMBOGE**, a substance produced in the province of Cambogia, or Cambodia, from whence this gum is called *Cambodia*, *Carcapuli*, &c. From its gold colour it hath been called *chrysopus*, and from its purgative quality it is named *succus laxativus*, *succus Indicus purgans*, and *scammonium orientale*. With us it is usually called *gamboge*.

It is a gummy resinous concrete, brought from the East Indies, said to be the produce of certain trees, called *Coddam-pulli*; but some say it is obtained from a shrub of the esula or tithymalus kind. The tree is the *Cambogia gutta*, or *Cambogia* of Linn. Indian Cambodia. It is brought to us in large cakes and rolls; it is solid, brittle, of a smooth surface, perfectly opaque, free from any visible impurities, of a deep reddish-yellow colour, equal and uniform throughout its whole substance. When chewed, it has little or no taste; but soon after it impresses a pungent acrimony and heat, and occasions a dryness in the mouth. It easily melts over the fire; it takes flame from a candle, burns with a white flame, and leaves a grey ash.

In human medicine it is chiefly used as a drastic purge, but it weakens the stomach. It produces copious discharges by stool, and its operation is usually very quick. On the first use of it in the human subject, it generally vomits, and then purges. It is given in dropsies. Gibson advises the union of it with alkaline salts, when given to horses.

**GAMBOIDEA**, a name applied to gamboge, with many other distinctions, as the *succus Indicus purgans*, *gummi gammandra*, &c. of which Rolinkius gives the history; as also hath Rudenius, a German physician, who wrote a whole book about it.

**GANACHES**, in the manege, the two bones on each side of the hinder part of the head, opposite to the neck, or onset of the head, which form the lower jaw, and give it motion. It is in this place that the glands affected in the strangles or glanders are placed.

**GANGAMON**, γαγγαμων, a name of the omentum, from its supposed likeness to a fishing-net, which the Greeks call *gangamon*. Some call that contexture of nerves about the navel thus.

**GANGLION**, γαγγλιον, in anatomy, im-

ports a knot frequently found in the course of the nerve, and which is not morbid. From whencesoever any nerve sends out a branch, or receives one from another, or where two nerves join together, there is generally a ganglion or plexus, as may be seen at the beginning of all the nerves of the medulla spinalis, and in many other places of the body. See **PLEXUS**.

**GANGLION**, in surgery, a moveable tumour formed any-where about the tendons of muscles and on the ligaments. The most frequent situation is about the carpus; but, whatever part of the body it is in, it is near the skin, and is not attended with any considerable uneasiness to the patient. Ganglions are formed of lymph, which is secreted within the vagina of tendons; they are different in their form, consistence, and other appearances, but they never suppurate. Authors reckon these tumours among those encysted ones called *meliceris*. For the most part, the matter of a ganglion resembles the white of an egg. Dr. Cullen ranks it as a genus of diseases in the class Locales, and order Tumores, and defines it, a hard moveable extuberation fixed upon a tendon.

The cure is effected, in horses and other cattle, by making an incision through its whole length, and afterwards dressing as in wounds in general; or they may be successfully extirpated, taking care not to wound the subjacent tendon or ligament, which can be generally avoided. Cutting away part of the cyst, and then digesting the rest away, by applying verdigrise or sublimate to it, will always succeed.

**GANGRÆNA OSSIS**, a name of the spina ventosa.

**GANGRENE**, a very great and dangerous degree of inflammation, wherein the parts affected begin to put on a state of putrefaction. Hence a gangrene appears to be a mortification in its beginning state, while yet the part retains some sense of pain, and some of the natural heat, by which last it is distinguished from a sphacelus, or thorough mortification, where there is no sense of warmth left. See **MORTIFICATION**.

The signs of a gangrene are when the symptoms of inflammation suddenly disappear, without taking away the cause; a dull sense in the part, softness, flaccidity, not rising again if depressed; pustules full of lymph, sometimes yellowish, at other times of a reddish colour, in and about the place inflamed. After this comes on a blackness of the flesh, &c. the signs of actual mortification.

To prevent a gangrene, the common means of resisting the progress of inflammation must

be resorted to; and where these seem to fail, the bark (see CINCHONA) must be administered in copious doses.

GANGUE, is the stony matter, crystallised or uncrystallised, calcareous or vitrifiable, which does not mineralise the metal found in it; but is only interposed between the metallic particles, whether mineralised or not.

GARGET, a disease in the horse and other cattle, is a swelling and inflammation of the head, affecting in particular the eyes and lips, and in the end inflaming also the gums and tongue. It is sometimes contagious. For the cure, the creature must be bled every day till the inflammation subsides. Immediately after the first bleeding, give two ounces and a half of Epsom salts, dissolved in a pint of warm ale; after which, night and morning, the following drench has been recommended:

Take of Warm ale, half a pint;  
Salt prunella, or nitre in powder,  
half an ounce;  
Venice treacle, a quarter of an ounce.

Mix these together, and give it in one dose.

The beast must be kept clean, dry, and quiet. It may be necessary, however, to look into the mouth for blisters, which generally appear upon the tongue; and, if there are any, break them, and dress them with ægyptiacum, or honey and vinegar. When the inflammation is likely to be considerable, local bleeding is very useful. With this view, some cast the animal on straw, and, taking forth his tongue, with the point of a knife open the middle vein, for about half an inch, near to the root of the tongue.

GARGET IN THE MAW. Old veterinary writers describe this disease of cattle as a dangerous one. "It is got," say they, "when the beasts eat of crabs or acorns lying under trees, which fruit for the most part they swallow whole, without breaking or chewing, so that it lieth whole in the maw, and will not digest. You may perceive it by their drooping and heaviness in their head, and hanging down of their ears: their heart will beat strongly, and they will be continually sitting." Except their advice to "let blood in the neck-vein," the remedies they prescribe are not worth repeating.

GARGLE, in horned cattle. This disease is described by farriers to be an external hard swelling in the dew-lap, which spreads afterwards to the breast and throat. For the cure, we are told to "bleed the creature largely;

then make an opening in the dew-lap where the swelling is, and put in as much of the leaves of bear's-foot, pounded, as the opening will admit. Sew this in with two or three stitches; which will cause a running, and put a stop to the disease." A common rowel will, no doubt, answer the purpose.

GARGLE, the same as Gargarism. See GARGARISM.

GARLICK, ALLIUM; *radix allii sativi*, Lin. These roots are of the bulbous kind, of an irregularly roundish shape, with several fibres at the bottom; each is composed of a number of lesser bulbs, called *cloves* of garlick, inclosed in one common membranous coat, and easily separable from one another. All the parts of this plant, but more especially the bulbs, have a strong offensive smell, and an acrimonious, almost caustic, taste. Applied to the human skin, it inflames and often exulcerates the part; and its smell is communicated to the urine.

This pungent root warms and stimulates the solids, and attenuates tenacious juices. Hence, in leucophlegmatic diseases, it proves expectorant and diuretic, and, if the patient be kept warm, sudorific. In humoural asthmas, and chronic affections of the lungs in horses, it has been prescribed with advantage.

Gibson's mode of administering it will be seen in the following formula, which, he says, is efficacious in all "dry coughs."

Take of pure antimony, in fine powder,  
eight ounces;  
Garlick, pounded,  
Flowers of sulphur,  
Coltsfoot dried and powdered, of  
each four ounces;  
Elecampane,  
Liquorice powder, of each six  
ounces;  
Valerian root, in powder, two  
ounces;  
Saffron, six drachms;  
Spanish liquorice, dissolved in white  
wine, one ounce.

Make these into balls, with a sufficient quantity of olive or linseed oil. One of these may be given daily for a month or six weeks, according to circumstances.

"Garlick alone," says Gibson, "cut small, two or three cloves in a feed, has been often found to do good service, when continued, in all such obstinate coughs. I have known abundance of horses, by the constant use of such things, and with right and well-timed exercise, and careful



feeding, recover to admiration, even when there has been a suspicion of their wind."

In another place, with a view to remove obstinate coughs in horses, and to prevent their becoming broken-winded, he advises the boiling some heads of garlick in cow's milk. "The usual dose," says he, "of the garlick is large, being no less than six whole heads, which are very different in size, some being four times larger than others, and therefore the dose must be very uncertain. These are boiled in three pints of milk to a quart, which is poured off, and given early in the morning, after a horse has stood some hours fasting. But I have known some horses, of squeamish constitutions, so desperately sick with the dose, when the heads of garlick happen to be large, that they have not recovered their appetite for several days after it; and therefore I have advised those who have been inclinable to use this easy remedy to weigh the garlick, three ounces, which is about six middle-sized heads, to peel it well and bruise it, and boil it only a short space in a quart of milk, for the long boiling thickens the milk, and makes it more sickly and cloying. Some horses are so delicate, that they cannot even bear it of that strength, without very great disorder; and to such I have advised half milk half water, and sometimes to lessen the quantity of the garlick: and I have known these things given every other day, for a week or a fortnight, remove very obstinate coughs; but then they were administered in time, before the cough was become habitual and fixed."

There can be no doubt of the utility of this remedy, from this account of it given by a writer of such extensive experience. There is reason, however, to suspect, that the same, if not greater, benefits would result from the exhibition of the fetid gums in the cases he has pointed out.

**GARGARISM**, γαργαρισμός (from γαργαρίζω, *fauces, colluo, to wash*), a liquid form of medicine to wash the mouth with.

**GAS**, an AERIFORM FLUID. From a variety of facts and experiments which have been made by modern chemists, it is evident, that caloric, in its combination with bodies, is capable of volatilising many of them, and of reducing them to the æriform state. The permanence of this state, in the temperature of the atmosphere, constitutes æriform fluids or gases. It is necessary, therefore, in order to reduce a substance to the state of gas, to dissolve it in caloric. This substance combines with various bodies, with greater or less facility; and there are several which, at the temperature of the at-

mosphere, are constantly in the state of gas. There are others, likewise, which pass to this state at some degrees higher, and these are called volatile or evaporable substances. They differ from fixed substances, because these last are not volatilised but by the application and combination of a large portion of caloric. It is clear, then, that all bodies do not indiscriminately require the same quantity of caloric to assume the gaseous state; and it will be found, that the proportion may be deduced from the fixation and concretion of these gaseous substances. In order to reduce any substance to the state of gas, the application of caloric may be made in different ways. The most simple method consists in placing the body in contact with another body which is heated. In this situation, the heat on one hand diminishes the affinity of aggregation or composition, by separating the constituent principles to a greater distance from each other; and, on the other hand, the heat unites to the principles with which it has the strongest affinity, and volatilises them. This process is according to the method of simple affinities; for, in fact, it consists of the exhibition of a third body, which, presented to a compound of several principles, combines with one of them, and carries it off. The method of double affinity may likewise be used to convert any substance into the gaseous form; and this is what happens when we cause one body to act upon another to produce a combination, in which a disengagement of some gaseous principles takes place. If, for example, the sulphuric acid be poured upon the oxide of manganese, the acid combines with the metal, while its caloric seizes the oxygen, and rises with it. This circumstance takes place not only in this instance, but on all other occasions wherein, an operation being performed without the application of heat, there is a production of vapour or gas. The various states under which bodies present themselves to our eyes depend almost entirely upon the different degrees of combination of caloric with those same bodies. Fluids do not differ from solids, but because they constantly possess, at the temperature of the atmosphere, that quantity of caloric which is requisite to maintain them in that state; they congeal and pass to the concrete state with greater or less facility, accordingly as the requisite quantity of caloric is more or less in proportion. In respect to solid bodies, they are all capable of passing to the gaseous state; and the only difference which exists between them in this respect is, that a quantity of caloric is required for this purpose, which is governed by

the following circumstances: by the affinity of aggregation, which connects their principles, retains them, and opposes itself to a new combination; by the weight of the constituent parts, which renders their volatilisation more or less difficult; and by the agreement and attraction between the caloric and the solid body, which is more or less strong or powerful.

It is likewise observable, that all bodies, whether solid or liquid, when they come to be volatilised by heat, appear in two states, either that of vapour, or of gas. In the first case, these substances lose, in a short time, the caloric which raised them, and again appear in their original form the moment the caloric finds colder bodies to combine with; but it is seldom that bodies thus divided resume their original consistence. This state is that of vapour. In the second instance, the combination of caloric with the volatilised substance is such, that the ordinary temperature of the atmosphere is insufficient to overcome the union. This is the state which constitutes the gases, or æriform fluids. When the combination of caloric with any substance is such that a gas is produced, these invisible substances may be managed at pleasure, by the assistance of apparatus which have lately been appropriated to these uses. These are known by the name of Pneumato-chemical, Hydro-pneumatic apparatus, &c. The pneumato-chemical apparatus, which is generally employed, consists of a wooden vessel, usually of a square form, and lined with lead or tin: two or three inches beneath the upper edge there is formed a groove, in which a wooden plank slides, having a hole in the middle, and a notch in one of its sides; the hole is made in the center of an excavation formed in the shelf, of the figure of a funnel. This vessel is filled with water or mercury, according to the nature of the gases to be operated upon. There are some which easily combine with water, and therefore require to be received over mercury. It is very well known that gases may be extracted in various ways. When they are disengaged by fire, a recurved tube is adapted to the neck of the retort, one extremity of which is plunged in the water or the mercury of the pneumato-chemical vessel, and opens beneath the aperture in the shelf, which is in the form of a funnel. The junction of the tube with the neck of the retort is secured with the usual lute; a vessel filled with the liquid of the cistern is inverted upon the shelf over the aperture. When the gas is disengaged from the materials in the retort, it appears in the form of bubbles, which rise, and

gain the superior part of the inverted vessel. When all the water is displaced, and the bottle is full of gas, it is withdrawn, by adapting a glass plate to its orifice to prevent its dissipation: it may then be poured from one vessel to another, and subjected to a variety of experiments, in order to ascertain its particular nature and properties. But when the gases are disengaged by means of acids, the mixture which is designed to afford them is put into a bottle with a recurved tube fitted to its neck; and this tube is plunged in the cistern in such a manner, that the bubbles of gas may pass, as in the former experiment, through the aperture of the funnel in the shelf of the vessel.

The processes which are employed at present to extract the gases, and to analyse them, are simple and convenient; circumstances which have highly contributed to the acquisition of the knowledge of æriform substances.

**GAS, AMMONIACAL,** alkaline gas, alkaline air, or volatile alkaline gas. The vapour of caustic volatile alkali may be raised by heat into a permanent gas. This is readily and copiously absorbed by water, with which it forms a strong volatile alkaline spirit. It also dissolves ice as fast as if the ice were exposed to a hot fire. It unites with the marine or vitriolic acid gases, forming concrete ammoniacal salts; and with the gas of calcareous substances, with which it concretes into oblong slender crystals.

**GAS, CARBONIC ACID.** From various substances a permanently elastic fluid is obtained, whose distinguishing property is, that it is capable of uniting with the caustic calcareous earth, or quick-lime, dissolved in water, and of precipitating this earth from the water. Accordingly, when a sufficient quantity of it comes into contact with lime-water, the water is rendered of an opaque white colour, and the small particles of earth which produce this turbid appearance gradually sink to the bottom of the vessel, leaving the water clear, and free from the earth which had been dissolved in it; while the earth, thus separated from the water which had dissolved it, is found to have recovered its solid form, and remains united and combined with the gas. Whatever gas therefore is observed to have this property of combining with the calcareous earth dissolved in water, may be distinguished from other elastic fluids by the name of calcareous gas. Dr. Hales and some others have denominated this fluid fixed air, the impropriety of which term appears from considering first, that this fluid is fixed only when it is combined with the calcareous earth or other substance; and that it is



the reverse of being fixed, that is to say, it is permanently elastic, whenever it is disengaged; and secondly, it does not possess the distinguishing properties of the fluid to which the word air has been immemorially assigned. Bergman calls this fluid the aerial acid; it is called by others mephitic acid, and mephitic gas: neither of which distinguishes it from other gases, all which (excepting air) are mephitic or noxious to breathing animals, and several of which are better entitled to the epithet acid.

Calcareous gases are obtained from a variety of substances, and by different processes; as, from calcareous earths, fixed and volatile alkalies, magnesia, the juices of fruits, infusion of grains, and other vegetable matters, while they undergo the vinous fermentation, also animal and vegetable substances undergoing the putrefactive fermentation. This gas is found in mines and other subterraneous places, also in most mineral waters, &c.

Amongst other properties of this calcareous gas, are the few following: It extinguishes flame; one part of this gas with nine parts of air does not admit a candle to burn; when this gas is respired, it is fatal to animals; vegetables also are destroyed by it; it resists putrefaction, by applying it to putrefying substances.

**GAS, FLUOR ACID.** It is obtained from the minerals called fluors; it no sooner comes in contact with water than part of it is absorbed, and at the same time the surface of the water becomes covered with a stony film, similar to that produced by the mixture of the acid of fluors with water; when this film is broken, another crust is formed on the surface of the water, and so on successively till the whole of the gas is absorbed by the water, which it will take up. The most characteristic property of the fluor acid is the power of corroding glasses.

**GAS, HYDROGENE, or inflammable air.** Some gases are capable of being inflamed. An inflammable gas is frequently found in mines, especially coal-mines, which sometimes take fire, and explode with considerable violence. It is obtained from iron, brass, tin, zinc, putrefying animal or vegetable matters, liver of sulphur, &c. The inflammable gases which have been principally examined explode during their inflammation, yet many others burn very well without explosion. Signor Volta thinks, that the ignis fatuus, which he supposes to be inflammable gas that has arisen from marshy grounds, and also that the falling stars, may have been kindled by means of electricity; for inflammable gas may be kindled by the electric spark, even when the electricity is not very

strong. Inflammable gas is noxious to animals, but is not hurtful to vegetable life.

**GAS, MURIATIC ACID.** This is obtained, by means of heat, from spirit of salt. It is quickly absorbed by water, which becomes a spirit of salt more or less strong in proportion to the quantity of gas absorbed, and thus a stronger marine acid spirit may be obtained than by any other method. Ice is as quickly dissolved by this acid gas as it is by a hot fire. It extinguishes flame; and, when mixed with air, it gives to flame a beautiful green or blueish colour.

**GAS, NITROUS.** It is produced by dissolving in the nitrous acid either iron, copper, mercury, silver, bismuth, or nickel, &c. When this gas is mixed with air, it produces heat, redness, a turbid appearance, and a diminution of the bulk of the air. The nitrous gas suffers no diminution upon being mixed with any other kind of gas than air; and, consequently, the diminution is greater when the air is purer. This nitrous gas is employed to measure the purity of the atmospheric air. It extinguishes flame, and is noxious to animals. It is absorbed by various liquors.

**GAS, NITROUS ACID.** The mere vapour of heated spirit of nitre was discovered by Dr. Priestley to assume the form of gas. It was readily absorbed by water, and it dissolved quicksilver. When it was mixed with nitrous gas, the mixture became red and turbid, the nitrous gas was diminished, and its power of diminishing air was lessened.

**GAS, VITRIOLIC ACID.** It is raised by means of heat, and of mixture with oils, charcoal, or other inflammable substances. It is readily absorbed by water; and, when thus brought into the form of a liquid, it possesses all the properties of a vitriolic, or rather, perhaps, of the volatile vitriolic or sulphureous acid.

Two kinds of gas are emitted from putrefying animal and vegetable substances, viz. one that renders caustic alkalies mild, another that is inflammable.

**GAS, AZOTIC.** See AZOTE.

**GAS SYLVESTRE.** The *carbonic acid gas*, which rises from spirituous liquors while they are fermenting, has been thus named.

**GASKOIN**, an old term in the manege, the hinder thigh of a horse, which begins at the stifle, and reaches to the bending of the ham. See the article THIGH.

**GAster**, γαστήρ, *venter*, the belly. It is sometimes taken for the whole abdomen, at others only for the stomach, and sometimes for any other cavity, particularly the uterus.

**GASTRIC JUICE**, the juice of the stomach.

**GASTRIC VESSELS**, those distributed to the stomach.

**GASTRICA ARTERIA DEXTRA**, or **GASTRICA MAJOR**. It proceeds from the hepatica arteria; it passes behind the pylorus, and beyond it sends out the duodenalis or intestinalis; then runs along the right side of the great curvature of the stomach, to the neighbouring parts of which, on both sides, it distributes branches, and at last ends in the gastrica sinistra.

**GASTRICA SINISTRA ARTERIA**, or **GASTRICA MINOR**. It is a branch of the splenica; it runs from the left to the right, along the left portion of the great curvature of the stomach. It supplies the omentum with branches called gastro-epiploicæ sinistræ, and then it communicates with the gastrica arteria dextra; and from this union the gastro-epiploicæ mediæ are produced.

**GASTRICA RECTA VENA**. It is sometimes a branch from the vena portæ ventralis, or from its principal branches. It goes to the pylorus, to the great curvature of the stomach, and communicates with the gastrica sinistra, &c.

**GASTRICA SINISTRA VENA**. It goes out from the splenica, at the left extremity of the pancreas, from whence it runs to the great extremity of the stomach, and along the great arch, until it meets the gastrica dextra. In its passage it sends branches to the sides of the stomach, and communicates with the coronaria ventriculi.

**GASTRITIS**, inflammation of the stomach. Dr. Cullen places this genus of disease in the class *Pyrexia*, and order *Phlegmasia*. He observes two species: 1. *Gastritis Plegmonodea*; 2. *Gastritis Erysipelatosa*.

**GASTROCELE** (from γαστήρ, the stomach, κηλη, tumour, or rupture), a rupture of the stomach, or other viscus in its region.

**GASTRODYNIA**, pain in the stomach. It is an instance of dyspepsia.

**GASTRO-EPIPLOICA**, an epithet for the arteries and veins that go to the stomach and omentum.

**GASTRORAPHY** (γαστροραφία, from γαστήρ, venter, the belly, and ραφή, futura, future), in surgery, the operation of sewing up wounds of the abdomen.

**GASTROTOMY** (from γαστήρ and τέμνω, fêco, to cut), the dissection of the bowels.

**GATHERERS**, or **NIPPERS**, the name usually given to four teeth which a horse gets when

he is three years old. See the articles *AGE of a Horse*, and *TEETH*.

**GAUNT-BELLIED**, or **LIGHT-BELLIED**. A gaunt-bellied horse is one whose belly shrinks up towards his flanks. Some conclude such a horse to be of a costive habit, and always washy and unhealthy after hard labour.

**GELATINE**, one of the component parts of an animal body. It is familiarly known by the name of *jelly*, and is procured by the solution of cartilaginous substances in water.

**GELATINOUS**, any thing approaching to the consistence of a jelly, whether animal or vegetable in its nature. Thus, a decoction of bread in water may be reduced into a jelly, for the use of the sick.

**GELDING**, a term used to denote the operation of castrating horses; and used also for a horse so castrated, or whose testicles have been cut out. See the article *CASTRATION*.

**GEMELLUS**, a muscle in the horse. See Plate XX. and the description of the "*lower limbs*," under the article *MUSCLES*.

**GEMINI**, are two muscles of the thigh which arise from the protuberance of the ischium, and are inserted with the pyriformis into the dent at the root of the great trochanter. For these muscles in the horse, see Plate XXI. and the description of the "*lower limbs*," under the article *MUSCLES*.

**GENERATION**, the act of *engendering*; or that corporeal intercourse between animals of the same species, but of opposite sexes, by which they propagate their kind.

The process of generation, so far as the male contributes to it, is as follows:—The penis being erected by a determination of blood, the glands at the same time tumefied, and the nervous papillæ in the glands much rubbed and highly excited in coitu, an ejaculatory contraction follows, by which the seed is pressed out of the seminal vesicles, and expelled with some considerable force.

The process of generation on the part of the female is thus:—The clitoris being erected, after the like manner as the penis in the male, and the neighbouring parts all distended with blood, they more adequately embrace the penis in coitu, and, by the intumescence, press out a liquor from the glands about the neck of the womb, to facilitate the passage of the penis. At the same time, the fibres of the womb contracting, open its mouth (which at other times is extremely close) for the reception of the finer part of the semen; and this being conveyed thither with some impetus, is retained in the uterus by the convulsive restriction of the inner



membrane thereof, and thus prepared to impregnate the ovum.

During the act of coition, the Fallopian tubes growing stiff, embrace the ovaries with their strong muscular edges like fingers, and compress them, till their mouths being dilated and expanded by this membrane, force the egg, now ripened, into their cavities, and gradually drive it forwards, by their vermicular motion, till at last they protrude it into the cavity of the womb, to meet the semen of the male.

Others rather suppose the seed conveyed from the uterus, through the Fallopian tubes, to the ova; and thus take the impregnation to be first performed in the ovaries, or even in the tubes themselves, the ova and the seed meeting by the way.

Others again, considering the closeness of the mouth of the womb, and the thickness of the membranes of the ovaries, judge it impossible for the seed to pass that way; and therefore suppose it is taken up by the veins which open into the cavity of the vagina, or even the womb; where circulating, it ferments with the mass of blood; and hence all the symptoms which appear in conception. At length it enters and impregnates the egg by the small twigs of arteries which are upon its membranes. This fermentation swelling the membranes of the tubes, they open their cavity, and make room for the ova to pass into the womb.

The egg impregnated, and close shut up in the womb, swims in the humours thereof; which, growing more and more subtil, enter the parent pores found on one side the ovum, and soon distend, fill, and augment it; and there being still further attenuated, nourish the embryo, thicken and expand the membranes of the ovum, especially in that part by which it grew to the ovary, and thus form the rudiments of a placenta.

The same causes still continuing, and the pores both of the placenta and the membranes being enlarged, the egg begins to fill the cavity of the womb; and at length its stem or calyx grows to the concave surface thereof, and thus is the navel-string formed.

This system is founded on the supposition of animalcula in the male seed. Some who set them aside, as unconcerned in generation, account for it thus: the seed containing volatile, oily, and saline parts, as appears from its fetid smell, oleaginous substance, &c. being lodged in the womb, and there further digested and exalted, grows yet more volatile, fetid, pungent, and stimulating; and thus, adding to the heat occasioned by coition, vellicates the nervous

fibres of that part, and occasions a fermentation, and gentle inflammation, and by that means an extraordinary flux of humours to that and the adjacent parts.

By this means the tubes become rigid, and fit to grasp the ovaries, which are also heated by the effluvia of the semen and the warmth of the parts surrounding. Upon this there is a greater flux into the ovaries; till, at length, the ova, some of them at least, by such greater supply of nourishment, increase in bulk; and as those grasped by the edges of the tubes will be kept warmest, and the greatest flux be made thereto, they will soonest be ripened, fall off, and be received by the tubes, and conveyed to the womb; where growing after the manner of the seeds of plants, the placenta at length takes hold of, and adheres to, the uterus; from which time the embryo begins to be nourished after a different manner.

**GENERATION, ORGANS OF.** In the larger quadrupeds there is a general resemblance both in the form and functions of these parts. Of the internal organs some notice has been taken in describing the contents of the abdomen (see ABDOMEN). In the horse, the external parts of generation are, 1. The *penis*, consisting of the *corpus spongiosum urethrae*, *glans penis*, and two *corpora cavernosa*, arising from the os ischium on each side, and uniting under the pubis; 2. The *testes*, included in the *scrotum*, or purse.

Concerning these, it is only necessary to observe, that the penis differs from the human in its form and blood-vessels. The *corpus spongiosum urethrae* possesses much muscular power, and has little connection with the body of the penis. This muscularity may be requisite from the length of this organ. Spasm seldom takes place in the urethra of the horse.

The corpus spongiosum is of a cellular structure. In the cells is deposited blood, from the two pudendal arteries: part of this blood likewise passes into the corpora cavernosa. In the human subject this blood is returned by numerous veins on the back of the penis and the bladder.

The glans penis of the horse is a termination of the corpus spongiosum, the posterior part of which is composed of an infinite number of small veins. The veins of the penis of the horse are placed on the dorsal part, and are found terminating in the femoral veins. From the cellular structure of these parts, the circulation is necessarily slow.

Erection is produced by these plexuses of veins, and depends much upon the mind. In-

deed, the arteries of the penis are of a voluntary description.

There are six glandular bodies, which have been mistaken for the prostate in the horse; but there is not any resemblance of this part. Four openings pierce the urethra at the same spot, but appear to have no connection: two of these are from the vesiculæ feminales, and the rest from the vasa deferentia; the former are the largest.

The fluid of the vesiculæ feminales has been supposed to be semen. Mr. Hunter, however, thought differently, and imagined, perhaps with great propriety, that it was merely a diluent of that secretion.

The *testicle* is a pulpy glandular substance composed of blood-vessels, absorbents, and some nerves, and not very sensible but in disease. Its artery arises from the aorta, is distributed in minute branches through the testicle, and ultimately has two terminations, the one in the veins, and the other in the ducts of the testicle. These ducts terminate in the epididymis, which is vulgarly called the *nut*.

The serpentine structure of the femoral ducts is to afford an opportunity for the absorption of its aqueous particles. These tubes are muscular, and eject their contents with considerable force. The arteries of the testicle terminate also in absorbents.

The testicle of the horse is not liable to many diseases. In the operation of CASTRATION, the reduction of the system by an antiphlogistic regimen is to be attended to, as has been observed under that article.

As to the parts of generation in the mare, she has her *uterus*, *ovaria*, and other parts, that contribute to conception and nutrition of the foetus. These are much the same in most of the greater quadrupeds, and have often been described by anatomists who have been attentive to the subject of generation. The following concise description of these parts from Professor Coleman's Lectures may therefore suffice.

The *vagina* and part of the *uterus* lie between the rectum and the bladder. Between the vagina and the bladder is a part, by Mr. Hunter, improperly considered a *hymen*. Its functions and situation are very different from the human hymen; mares which have repeatedly had foals having still this part remaining. Its use is merely valvular, as it prevents the urine from passing into the interior and lower part of the vagina. In the living state the vagina is rugous and vascular. At its termination is a small opening, the commencement of the os

uteri. This orifice is always open in the unimpregnated state, but closes upon conception. The semen is injected at once into the uterus. In the human subject there is only one cavity, which is called the uterus; but in mares, and in most other quadrupeds, are two tubes: these are called the horns of the uterus, but may be termed uteri themselves. It has been said, that the reason of there being two cavities was for the purpose of a more abundant conception; but why have mares two uteri? At the extremity of each horn is placed an ovary. These organs are absolutely necessary, and intimately concerned in generation; in what manner they are useful we are unable to determine: they are connected to the horns by a ligament and the Fallopian tubes, at the end of which are found the fimbriae. There seems to be no connection or no direct communication between the ovaria and the uterus: how, therefore, does the semen pass into the ovaria from the uterus? or, how does the semen affect the ovary? or, how is the young produced? However strange this may appear, it is known to be really the case; and the young, at a certain period, bursts from the ovary, and proceeds through the Fallopian tube into the uterus. Sometimes this foetus is conveyed into the abdominal cavity, and grows there, but ultimately produces the death of the mother. When the young foetus is conveyed into the uterus, the os uteri becomes closed from a sympathetic power. The embryo adheres to the uterus by the coagulable lymph which is thrown out. In women, it usually adheres to one, which is the superior, part of the uterus; in sheep and oxen, to several, called placentalæ; but in the mare, to the whole of the uterus. At this period, nausea, sickness, &c. ensue in the mother. A quantity of water is discharged between the foetus and placenta, which water diminishes in its proportionate bulk, according to the age of the foetus. The uterus now becomes larger, not from extension, but by a growth which ensues from its being now much more vascular.

In impregnation the uterus becomes incapable of growth after a certain period: this circumstance is particularly uniform. At this period labour commences, from the foetus still increasing in bulk, and the uterus being deprived of its wonted power. The uterus contracts on the foetus, and, from the expansion of the os uteri, the former is at length discharged. In quadrupeds, the placenta and other membranous parts accompany the foetus: there is a natural desire in the mother to eat these



membranes, a desire which, from its convenience in many respects, ought to be encouraged.

GENETTE, in the old manege, a Turkish bit, the curb of which is all of one piece, made like a large ring, and placed above the liberty of the tongue. When they bridled a horse, they made his chin pass through this curb, which surrounds his beard. This sort of bit was much used at the court of France when Guillet wrote.

GENETTE, is also used for a particular way of riding practised in Spain: this, being so short that the spurs bear upon the horse's flank, would be reckoned absurd in England; but, among the Spaniards, it is thought handsome, when they ride upon their genettes before the ladies in going to court.

GENIO-GLOSSI, a pair of muscles proceeding inwardly from the fore part of the lower jaw under another pair called *Genio-hyoides*, and, enlarging themselves, are fastened into the basis of the tongue. These serve to pull the tongue forward, and to thrust it out of the mouth; thus called from *γενειον*, *mentum*, the chin, and *γλωσσα*, *lingua*, the tongue.

GENIO-HYOIDÆUS, is a muscle of the os hyoides, which, with its partner, is short, thick, and fleshy, arising from the internal parts of the lower jaw-bone, called the chin, and, dilating themselves, are soon lessened again, and inserted into the superior part of the fore-bone of the os hyoides. These pull upwards and forwards the os hyoides, and assist the genioglossi in thrusting the tongue out of the mouth; from *γενειον*, *mentum*, the chin, the Greek ypsilon, and *ειδος*, *forma*, *shape*. For this muscle in the horse, see Plate XX. and the description of muscles "in the neck," under the article MUSCLES.

GENIO-PHARINGÆI, are muscular fibres joined to the side of the genioglossi, and inserted into the sides of the pharynx, continue their conjunction with the genioglossi all the way to the chin.

GENISTA, *Broom*, a genus in Linnæus's botany. He enumerates fourteen species, and three varieties.

GENITAL, is applied to any thing that concerns generation, and particularly to the distinct parts of males and females.

GENSING, or GINSENG, the panax quinquefolium of Linnæus. It is the root of a small plant which grows in China, Turkey, and some parts of America, particularly in Canada and Pennsylvania.

GENTIAN, *Gentiana lutea* Linn. The root of this plant is commended by Gibson as a ve-

terinary remedy. It is a principal ingredient in the composition, frequently given to cattle in drenches, called DIAPENTE. It is a powerful bitter, and, as such, reckoned a good stomachic and anthelmintic.

GESTATION, exercise; also the time of a female's going with young: from *gesto*, to bear. The latter case is usually termed *utero-gestation*.

GIBBOSITY (from *gibbus*, *hump-backed*), crookedness, any protuberance or convexity, having resemblance thereunto. A gibbosity of the chest from a faulty arrangement of the dorsal vertebræ sometimes occurs.

GID, or GIDDINESS, a vertigo affecting the head, in sheep, asses, and some other animals (see VERTIGO). This complaint is common among sheep that are too richly fed. The farmers call it *sturdiness*, or the *sturdy evil*. The cure they attempt in the following way, after bleeding to about three quarters of a pint.

Take of *Asa-fœtida*, an ounce;

Dissolve in a quart of water, and add

Juice of garlick, four spoonfuls;

Honey, two ounces.

Give a quarter of a pint once in three hours, till half is taken; then the rest at equal doses, night and morning.

The sheep, if put into hilly pasture-ground, will be less liable to relapse. See the article SHEEP.

GIGGS, or GIGS, or FLAPS, little swellings or bladders, with black heads, that grow in the mouth of a horse, on the inside of the lips and palate, which will sometimes appear as big as a walnut, and are so painful, that the horse will let his meat fall out of his mouth, or, at least, keep it in his mouth unchewed. Gigs are cured by slitting them open with a lancet, and washing them afterwards with vinegar. But when they degenerate into what are called *cankers*, which are known by little white specks that spread into irregular ulcers, the best method then is to touch them with a small flat cautery, till the spreading is stopped, and to rub the sores three or four times a-day with ægyptiacum and tincture of myrrh. When, by this dressing, the sloughs are separated, they may be washed with a sponge dipped in alum, green vitriol, or sublimate water, if they continue to spread; or with a tincture made by dissolving half an ounce of alum, and two ounces of honey, in a pint of tincture of roses. Either of these will cure them, and are very useful in most disorders of the mouth.

**GIGOT**, in the manege. A branch after the form of a gigot, or leg, is one, the lower part of which is round, and called in French *gargouille*.

**GILL**, another name for ground-ivy. See **GROUND-IVY**.

**GINGER**, a well-known aromatic substance, suitable, on account of its cheapness, to be used in veterinary prescriptions. It is a common ingredient in cordial balls, drinks, &c. administered to cattle.

**GINGLYMUS**, that sort of articulation when a bone both receives and is received. The property of this sort of articulation is to admit only of the motions of flexion and extension. It is called by mechanics *charnel*, and it is commonly used in hinges. Of this articulation there are three sorts. The first is when the end of a bone has two protuberances and one cavity, and the end of a bone which is articulated with it has two cavities and one protuberance; as the human humerus and ulna. The second is when a bone at the extremity receives another bone, and at its other extremity is received by the same bone; as the radius and ulna. The third sort is when a bone at one end receives another bone, and at the other end is received by a third bone; as the vertebrae do.

**GIRLE**, or **GYRLE**, a roe-buck of two years old.

**GIRTHS OF A SADDLE**, the strong web, or canvas straps, which, being buckled under a horse's belly, serve to fix the saddle (see **SADDLE**). It is a common error to girth a horse too strongly, not only when he is to be mounted, but even when standing clothed in the stable. Mr. Clark condemns this practice very pointedly, in his account of the management of sick horses.

**GLAND**, in anatomy, a soft, spongy, lax body, serving to separate some particular humour from the mass of blood, and in brute creatures commonly called a kernel. A gland is principally composed of a long-continued convolution of one or more arteries, from whose sides arises a multiplicity of excretory ducts, of larger or smaller dimensions, in proportion to the thicker or thinner fluid destined by nature to pass through them, agreeably to the exigencies of the animal fabric. Most parts of the body are supplied with glands, and those of various kinds. The skin abounds with minute glands, for the secretion of the sweat. The udder is a gland whose office it is to prepare the milk, the liver is a gland that separates the bile from the blood, and the kidneys are glands

formed for the secretion of the urine. The salivary glands contribute to moisten the food, and render it more easy to be digested.

As to what regards the lymphatic glands, some of these are situated in the head, some of them in the chest, and some in the lower belly; whilst others are dispersed in the interstices of the muscles, or accompany the large blood-vessels. The limbs are furnished with fewer of them, and those generally small; but notwithstanding, if diseased, they will acquire a considerable size. From the bursting of these vessels, thus increased in their bulk, proceed dropsies, &c.

Several ill effects arise likewise from disorders in the other glands: as the jaundice, from a distempered liver, or an obstruction of the biliary ducts; strangles, from a preternatural state of the parotid and other glands about the ears, mouth, and throat; and stubborn costiveness, but sometimes a purging, from a diseased state of the small glands of the intestines. The glands of the external parts are also sometimes inflamed and suppurate, and sometimes grow hard and scirrhus. Nor are the glands subservient to the lubrication of the joints exempt from being affected with disease.

**GLANDERS**, a disease in the horse, so termed, probably, from the swelling, with which it is usually accompanied, of the sub-maxillary glands. It consists of an altered and vitiated action of the vessels which, in a state of health, secrete the mucus covering the pituitary membrane, or that membrane which lines the cavity of the nostrils. In the incipient state of the complaint, this membrane is apt to appear much inflamed, and discharges a small proportion of whitish glutinous pus. As the disease becomes more violent, the discharge assumes a sanious appearance, a disagreeable smell, and an unpromising colour, or a mixture of colours, being frequently composed of several, as yellow and green, with red or bloody streaks. At this period, although it may be out of our limits of inspection, there is reason to suspect that ulceration has taken place in some of the sinuses of the head. A small swelling may, in the majority of cases, be perceived in one or more of the glands under the jaws, seldom attended with pain, and scarcely ever increasing to any considerable size. The progress of the disease is extremely uncertain; as some horses will endure it, even for many years, without any other obvious inconvenience than a slight discharge, and the enlargement of the glands; and, indeed, there have been instances of these symptoms



disappearing for several weeks, and returning, perhaps, with no augmented virulence. In most cases, however, the course of the malady is more rapid; the bones and cartilages of the nose are speedily eroded by the malignity of the ulcers, from which an absorption commences, and conveys the poison into the circulation, gradually and fatally contaminating the whole animal frame.

It is but seldom that either the appetite or the condition of a glandered horse suffers materially in the early or mild stage of the complaint. When, however, it has spread its dominion over the thoracic viscera, forming ulcers in the substance of the lungs and in the wind-pipe, great pain and difficulty are experienced in respiration, the discharge becomes immense, the appetite is injured, the body of the unfortunate animal displays a haggard and striking picture of distress, and, if neither motives of humanity nor of safety induce his owner to destroy him, dissolution will approach by tardy steps, and, at length, afford effectual relief to the wretched sufferer.

It seems pretty universally understood, that the disease called glanders is highly contagious, the matter of it for years retaining its noxious quality. We believe, however, that contagion is not so frequently the cause of glanders as some other circumstances. The horses of regiments that have been long encamped, in severe weather, suffer considerably more from the glanders than those which have not been engaged in that species of service. It would appear, that this arises from horses, on such occasions, being confined to a particular spot, when not on duty, and exposed to all the inclemencies of the season; and, in the mean while, they are prevented from supporting the bodily warmth by such means as they would instinctively employ at grass, such as ranging about, and seizing every opportunity of sheltering themselves against the keenness of the weather. Sudden changes of temperature, and also of condition, may be considered as great causes of glanders: it is well known, that horses of the above description have to undergo these disadvantages most particularly. To the causes already mentioned may be added, infection from the matter of farcy when applied to the nostrils, violent colds long neglected, and the respiration of foul air in close stables, or in the holds of shipping. It was the opinion of the celebrated Buffon, that the horse acquired the glanders by immersing his nostrils deeply into the water when drinking, and the coldness of the fluid producing an inflammation of the pituitary mem-

brane. To support this conjecture, he remarked, that the ass drank more superficially, or from the surface of the water, by which method he avoided the complaint. Were the ass, however, treated after the manner of horses, we are convinced that the one would be as liable as the other to the glanders; but, inured from his infancy by nature and habit, his weather-beaten frame is nowise affected by a variety of changes which operate so frequently and so powerfully on the animal more delicately used. Notwithstanding these circumstances, the ass is subject to the glanders; and, according to the present state of our knowledge of the disease, it seems peculiar to the horse, the ass, and the mule.

The efforts of veterinarians have usually been employed in endeavours to destroy, not to propagate, this dreadful malady, and we are acquainted with no other quadrupeds liable to be afflicted with it; yet we are strongly inclined to suppose it might be communicated to some of them by inoculation. It appears, that a glandered horse may accompany horned cattle, when at grass, without any danger of their receiving injury from the disease. We should be happy could we offer to the public an effectual method of cure for this baneful distemper, but this at present is not within the limits of our abilities: still, we must confess, we are sanguine enough to hope, that, by some accident or other, or by the exertions and experiments of men of enterprising genius, an antidote will be happily discovered, fully adequate to the important task of totally eradicating this most destructive and very prevalent calamity.

On a supposition that the glanders was merely a local disease, some writers, particularly of the old school, have asserted, that it might be removed by the use of astringent and detergent injections. More effectually to apply these, the sinuses of the head have been laid open by the operation of trepanning; yet, notwithstanding the assertions of the advocates of this treatment, we believe this practice has never been attended with permanent success. We imagine, that cases of glanders truly local are seldom to be met with. The blood is generally much contaminated, as may be easily proved by the operation of transfusion: if we take a quantity of blood from a healthy horse or ass, and replace it with an equal proportion, while in its fluid state, of blood drawn from the animal afflicted with the glanders, the disease will make its appearance in the course of a few days, and in a more violent degree than it can be produced by any other means of contagion. For a particu-

lar description of this experiment, see the article TRANSFUSION.

The analogy existing between the glanders and the venereal disease is exceedingly striking; unluckily, however, they vary in the most essential particular; for the glanders will not yield to mercury. A case indeed occurred at the Veterinary College, of a coach-horse belonging to Mr. Houlston, one of the examining committee of that institution, supposed to have been perfectly cured by a long course of mercurials. Professor Coleman makes mention of this case in his Lectures, and certainly with good reason, as two facts were apparently established, which seemed to mark it with a degree of decision: these are, first, that the horse was perfectly cured; and, secondly, that the disease of which he *was* so recovered was the glanders. No doubt would have arisen as to the nature of his disease, had it not yielded to the treatment employed, which was that of repeated and long-continued doses of calomel, carried to the extent of salivation. To remove that doubt, however, the horse was kept in a stable with other glandered horses; so that, if the disease had been any other than what was supposed, the animal could not fail of being infected: but the fact was, that he was sent from the infirmary of the College free from the complaint, and we have since had reason to know that he experienced no relapse. It may be supposed, that this case led to many trials of a similar nature, but, unhappily, without the success which was hoped for by the Professor, who exerted his wonted ingenuity to improve the hint which this *solitary* instance appeared to afford. We too have administered mercury in every way we thought the most promising of success; but, though we have sometimes flattered ourselves that the symptoms were abated by its assistance for a time, we have invariably suffered an ultimate disappointment.

Some years ago, great expectations were formed from the use of the mineral acids in the venereal disease, and, from the obvious resemblance that that complaint and the glanders bear towards each other, some trials were made on a few cases of the latter, but without the desired success.

We have been informed, and from respectable authority, of horses decidedly glandered recovering spontaneously; but our own experience does not supply a single fact to countenance this suggestion. As the glanders are equally fatal and contagious, great attention ought to be paid to any discharge which may be perceived from the nostrils, or any swelling of

the glands; for one of these circumstances does not invariably precede the other. Colds and strangles may be mistaken, by persons unacquainted with the nature of the diseases of horses, for the glanders; but a considerable light will be thrown on the subject, perhaps, by the following observations. In the former complaints, there is always some degree of fever, a dullness about the eyes, and a loss of appetite: in glanders, none of these symptoms occur, except in its latest stages. In colds, and in the strangles, the swollen glands are painful to the touch, increase rapidly in bulk, and may be brought without much difficulty to suppuration: in glanders, they are nearly insensible, and seldom become larger than a walnut. The discharge from a catarrh is usually from both nostrils, is plentiful in quantity, of a healthy colour and consistence, and inoffensive odour; it will flow still more profusely by exposing the head to the steams of hot mashes: on the other hand, the discharge in consequence of glanders is originally very small in quantity, soon acquiring a strong and disagreeable smell and colour, and is very little affected by warm vapours. A cold does not always, though it does in general, attack both nostrils: the glanders most frequently affects one only, to which it may confine itself for many months, and the gland will most probably be found enlarged on the side of the affected nostril. In all cases, however, where there appears the most distant prospect of danger, it will be highly prudent to separate the diseased from other horses; and, before the expiration of any long period, we shall be pretty accurately convinced of the real disposition of the complaint.

As we are led, by experience and the information of others, to think, that severe or tedious catarrh, attended with a discharge from the nose, is sometimes apt to degenerate into glanders, we conceive, that, on such an occasion, the means recommended for the cure of the former (see the article CATARRH) should be particularly attended to, as they may possibly have the effect of preventing an evil of a more serious complexion. Wherever the matter may be supposed to be detained or lodged in the upper parts of the nostrils, the steams of scalded bran, and injections of milk-warm water, frequently employed, will be found of considerable advantage.

When a horse exhibits such appearances as hold out an undoubted proof of the disease being the glanders, the sooner he is destroyed the safer it will be to the proprietor, as well as more humane to the animal. Nothing but laudable



motives of experiment should induce us to protract his tedious and melancholy existence.

We have observed, that, whenever a horse is in the least suspected of glanders, it is proper that he should be removed from other horses, and kept alone, sufficiently secure from all possible communication with them: but particular care is also to be taken that the rack, manger, and such other parts of the stable as he may have come in contact with, be thoroughly cleansed from every particle of the infectious matter, the virulence of which we know no means of destroying but by totally removing the matter itself. The most effectual way of accomplishing the above purpose will be by scraping the contaminated parts with knives or other sharp instruments, scouring them afterwards with soap, sand, and boiling water, and repeating the process until we are convinced it has exterminated every source of contagion; and lastly, a thick coat of well-sixed lime should be spread over the whole. It is scarcely necessary to add, that the litter must be swept completely away, and the stable-floor properly cleaned.

It is a common practice with the owners of horses, when they have had any one of them seized with the glanders, to bleed and purge the rest, by way of prevention: the intention is certainly good, but the consequences cannot possibly prove what they are led to expect. The above method will serve rather to promote, than to prevent, the disease, as it will considerably increase the action of the absorbent vessels, by which action the glanders is conveyed into the system. All we would recommend on these occasions is, to remove them from that part of the stable in which the suspected horse had been standing, until it shall have been made pure from all matters of an infectious quality, and their nostrils may be washed a few times with a sponge and warm water.

Great stress having been laid by writers on farriery on the virtue of fumigations of brimstone and other substances, some persons, fully depending on their efficacy, have adopted them, without attending to such simple, yet much more powerful, means as we have already mentioned. It is from *actual contact* only with the *matter* of a glandered horse, and not from any *vapour* that arises from him, that other horses receive the infection; and although we admit that foul air will produce the glanders, the air we mean is what has become heated and vitiated by being respired by a number of animals for too long a period. We believe, that, by throwing open the doors and windows of the stable

for several days, every purpose of fumigation will be answered; but where the mind can receive any satisfaction from their use, it will certainly be as well to employ them, at the same time attending to the other precautions.

We have thus given a summary view of this inveterate disease, its nature, symptoms, and *too uniform* termination; and we apprehend we have spoken the sentiments of every enlightened veterinarian on the subject. Humanity to the animals affected with glanders, and consideration likewise to their owners, have induced us to recommend that such horses should be dispatched as soon as the nature of the disease has been clearly ascertained. To direct the judgment in the latter respect, we have laid down as clearly as possible the distinctions to be made between the glanders and the only diseases of the horse which bear any resemblance to it. To our intelligent brethren, however, we suggested the necessity of decisive experiments on glandered horses, with the hope that this opprobrium of the veterinary art would sooner or later be removed. To them, therefore, it is of importance to know what has been unsuccessfully attempted already; and we cannot more properly pursue this article than by citing, from the works of the late Professor of the Veterinary College, Mr. ST. BEL, the experiments made by him at the veterinary school at Lyons, whilst he was professor there.

At that period, the inhabitants of Lyons, it seems, were obliged by law to give information to the directors of the school of all horses affected with the glanders in that city and its vicinity. Mr. St. Bel had, consequently, many opportunities of making trial of different remedies, both internal and external, as he was at liberty either to kill or to preserve the glandered horses, for the instruction of the pupils, as he thought proper. The cases he records are the following.

I. Three horses affected with the glanders, discharging copiously at the nostrils, one seven years old, another eight, and the third eleven, were all put into the same stable, and submitted to the following course:

1. Each was bled from the jugular vein.
2. Their nostrils were injected with lime-water, in which was some vinegar and common salt.
3. Their food was reduced one third.
4. Each took six drachms of kermes mineral, and three of camphor, made into a ball with flour and honey. The injection was employed twice a-day; and the ball was administered on the fourth, fifth, sixth, and seventh days.

On the eighth, in the morning fasting, and at night, a quart of red wine, saturated with regulus of antimony, was given. One of the horses began to purge on the ninth day, at five o'clock in the morning, and it was over by three o'clock in the afternoon; the second had frequent provocations without voiding at all; the third did not seem to be any way moved by the medicine. On the same day their nostrils were injected with a mixture of spirit of wine and water, in which copperas and gall-nuts had been infused. On the tenth, this injection was repeated; and, on the same day, they took the ball, with kermes, camphor, and honey.

On the twelfth, the running at the nose had rather abated in all; but the pituitary membrane seemed more inflamed. The kermes ball was given.

Thirteenth. Their food was reduced to half the original quantity, diluents were employed in abundance, and an emollient clyster administered to each.

Fourteenth. They had the red wine, with regulus of antimony.

Fifteenth. One of the horses evacuated tolerably well, and the other two very little.

Sixteenth and seventeenth. The injection was repeated.

From this time to the twenty-fourth the injection and the ball were used. The discharge was much diminished in the first and second horses, but still abundant in the third, through one of the nostrils only. The lymphatic glands were much enlarged.

On the thirty-second day, the ball was continued. Injections were made with alum and vitriolated zinc, dissolved in lime-water, to which was added a small quantity of vinegar. The remedies were continued till the thirty-fifth, when the running disappeared in one of the horses.

In less than a week afterwards, the running ceased in the second. The bolus and injections were continued every other day only. The general treatment was continued with the third horse till the fifty-fifth day. The running ceased in him also after a treatment of two months from the first. A stop was now put to all medicines. The enlargement of the glands was removed also in one of the horses, and remained a very little in the other two. Every thing seemed to promise a complete cure till the seventy-second day, when the running appeared *anew* in one, and shewed itself at the end of three weeks in the second: about three months, however, elapsed before it returned in the third

horse; but in all it was *more violent than ever*. The two former animals were first killed for investigation; when it appeared, that the frontal and maxillary sinuses were filled with purulent matter in both, the pituitary membrane was also ulcerated in many places, but all the other parts appeared in their natural state. The third horse was afterwards killed and opened. In him the frontal, maxillary, and zygomatic sinuses contained much bloody matter, the membrane was ulcerated to a great degree, the bones carious in many parts, and the lymphatic gland on the right side was become scirrhus. In the right lobe of the lungs five vomicas were found by Mr. St. Bel, of nearly the bigness of a pigeon's egg. No other part seemed to be morbidly affected.

II. Two saddle-horses (one Spanish, the other Navarese), of nine and seven years old, decidedly glandered, were put under the following regimen. After being restricted to a low diet for two days, they were let blood.

On the fourth day, the sinus in each was trepanned; the Spanish horse on the left side, to which the running was confined, the other on both sides. There was injected through the openings a mixture of lime-water, vinegar, and falt.

On the sixth day of treatment, each had four quarts of lime-water, sweetened with honey, administered as a drench. This and the injections were continued till the fifteenth day.

On the sixteenth, the running had diminished one half; but the swelling of the glands was augmented. On the next day, the running became more abundant; but the matter seemed to be of a better sort. *The lime-water was continued till the thirtieth, in the proportion of six quarts a-day.* The horses now becoming dull, and disgusted with their food, this course of medicines was suspended till the thirty-sixth day, when they were ordered two quarts a-day of a strong infusion of chamomile. This being continued till the forty-second, their appetites returned; but the discharge, as well as the affection of the glands, continued the same.

On the forty-third day, an injection, with alum, vitriolated zinc, lime-water, and vinegar, was administered, and continued a week; at the end of which time the matter was become whitish, and flowed in small quantity: but the Spanish horse now discharged at *both* nostrils. At this time injections were given, made with diluted spirit of wine, green vitriol, and gall-nuts.

On the sixty-sixth, the running had almost disappeared; both horses were in good spirits,



eat and drank as usual, and they were walked out an hour every day.

Shortly after, the Spanish horse seemed to be cured, and continued so about a month; after which time the running appeared again; the matter became bloody and fetid. Convinced now of the inefficacy of the remedies used, he was killed. On opening the nose, it was found, that the membrane was corroded, particularly on the right side; the superior horn was almost destroyed, and the lachrymal duct choaked up with purulent matter. The dissection, in other respects, offered nothing particular, except a small portion of the interlobular texture of the lungs, which had imposthumated; but the matter had not penetrated into the bronchia. The maxillary glands contained a concreted pus.

The Navarrese horse preserved, to all appearance, perfect health from the beginning of June to the end of August in the same year. At that period the running took place again; and, in the space of three weeks, the disease increased to such a degree, that it became necessary to kill the animal. On opening him, the pituitary membrane was found ulcerated to a great extent of its surface; the cartilaginous partition was attacked by the matter; the sinuses contained very little of it.

III. A large cart-horse, ten years old, having the usual symptoms of the glanders, was put upon the following course.

The animal's food was reduced to bran and white-water, and he was bled twice in the space of two days. On the third, he underwent the operation of the trepan in two places; and he had injected into the nasal passages and sinuses a strong decoction of wormwood, with the addition of honey.

On the tenth, the injection was of the weaker lime-water only, and it was continued till the sixteenth, when three drachms of Ethiops mineral in a bolus were given. The injections were made with the first lime-water, and continued till the twenty-fourth, as also the bolus, with an addition of a drachm of Ethiops mineral. At that period the running was diminished one half, and the matter had improved. The same course was pursued till the forty-first, when the running was found to be almost suppressed, and the size of the gland considerably diminished. The injections and bolus were continued till the fiftieth, when the running quite ceased. The injection was now repeated only every other day, and the Ethiops in the bolus was reduced to two drachms.

On the sixty-first, all medicine was discontinued,

and soon after the horse was gradually brought to his usual quantity of food. He was placed in another stable, his dress was changed, and he was walked out every day in an inclosed place; during which time his former stable was well washed and fumigated. These precautions, however, did not prevent the running at the nose from returning at the end of three weeks, and the animal was then killed. On opening his nostrils, the membrane was found to be ulcerated in three or four places only. One of them, which was broad and deep, had attacked the bony substance. The sinuses contained, as usual, much yellowish matter, mixed with blood. In this case, part of the villous membrane of the stomach was slightly inflamed; the cardiac orifice was a little more so; the inflammation had also reached the small intestines; the left lobe of the lungs was also somewhat inflamed.—Were these supplementary appearances the consequence of the Ethiops mineral administered, or of the virus of the glanders?

IV. Two Danish coach-horses, the one seven years old, the other eight, had the glanders. The first was in the confirmed state, the second only at an early stage, of the complaint. They were kept separate, and put under the following course.

1. They were denied hay for some days, and had bran and white-water only for food.

2. They were bled at the jugular vein; and to each two emollient clysters were given.

3. A decoction of marsh-mallows, pellitory, elder-flowers, and chamomile, was injected into the nostrils.

4. The horse most infected had a bolus of four drachms of "mercury," [quere calomel?] and as much cream of tartar [an unusual pharmaceutical combination], incorporated in a sufficient quantity of honey. The other horse took a bolus composed of two drachms of precipitate *per se* (*hydrargyrus calcinatus*), incorporated with honey. The injections, clysters, and boluses, were continued till the twentieth day.

On the twenty-first, the running was much increased in the former horse; the matter also was brownish and bloody at intervals, and the lymphatic glands were enlarged. In the latter, the running was less abundant, clear and transparent, and the glands less hard and enlarged. The same course was followed and adhered to in both till the thirty-first, when it appeared that the running had stopped in the latter; to which, however, the same course of medicines was continued a week longer.

On the thirty-sixth, the operation of trepan-

ning was performed upon the former horse. The cavities were injected with lime-water; afterwards the injections were used which are mentioned in the first and second cases. The evacuations, in consequence of the bolus, being great, they were suspended; but Mr. St. Bel continued the injections till the sixty-fifth day. The running now appeared and disappeared alternately, but at last became constant, and of a bad sort. As the animal fell away rapidly, it was thought best to kill him. On opening the body, however; nothing particular appeared, except an infinite number of little ulcers on the pituitary membrane. The sinuses contained but little matter. "The other horse," says the author, "appeared to be *radically cured*; which I ascribed to the good habit of the animal's body, the small quantity of the virus, its lesser degree of malignancy, and the short time it was allowed to ravage, rather than to the course of medicines. Besides, in these matters, a single fact cannot establish any thing."—Query, Was this horse really *glandered*? Do the symptoms detailed in his case admit clearly of such a decision?

V. A saddle-horse, about eleven years old, newly attacked, as Mr. St. Bel was informed, with the glanders, was let blood, confined to low diet, and had several emollient clysters administered for three days. He was then treated exactly as the horse last mentioned, but the success was not the same; for, after three months' perseverance, he was obliged to be killed. On dissection, the pituitary membrane was found ulcerated, but nothing else remarkable could be traced.

VI. A saddle-horse, nine years old, with the confirmed glanders, which had made some progress, was put under the same course of medicines as the preceding one for ten weeks. At that period the remedies had produced no good effect: the discharge was abundant, bloody, and foetid; the breathing became extremely laborious; in short, all the signs of death appeared, and the animal shortly expired. On dissection, the nostrils exhibited the same appearances which had been observed in similar cases, but with this additional circumstance, that within the lungs was found a collection of foetid pus, mixed with the natural humour of the bronchia. The professor thought it possible that the virus of the glanders might have produced those effects.

VII. Three hackney coach-horses, eight, nine, and eleven years old, were sent to the Institution, affected with the glanders nearly in the same degree.

As Mr. St. Bel had heard the efficacy of Ethiops mineral and periwinkle in the glanders much spoken of, he embraced this opportunity to make trial of them.

The patients were all three treated with white-water and emollient clysters, as in former cases. The following purge was then given to each:

Take of Calomel, two drachms;  
Aloes, one ounce;  
Jalap,  
Cream of tartar, of each two drachms;  
Honey, enough to make a ball.

This operated (as might be *expected*) pretty sufficiently; and, on the third day, one ounce of Ethiops mineral and one ounce of powder of periwinkle were given.

On the fourth, each was trepanned on one side, and the cavities of the head were injected with a detergent liquor. The Ethiops mineral and periwinkle powder were continued to all the three horses till the tenth day.

On the eleventh, the purge was administered as before, and with the same effect. All medicine was now suspended, except the injection, till the fifteenth, when they returned to the use of Ethiops mineral and periwinkle, in which course they continued till the end of the twenty-fourth day.

No medicines were administered for the next two days; but bran-water and clysters were given. At that period, the running of matter was diminished in one, but it was increased in the two others. On the twenty-seventh, therefore, they took the usual medicine.

On the twenty-eighth, they purged considerably; and, on the next day, seemed dejected, dull, and disgusted with food. Mr. St. Bel, therefore, suspended all operations till the thirty-fifth, when he repeated the injections. On the thirty-sixth, the appetite came again. On the thirty-seventh, the Ethiops mineral, periwinkle, and injection, were continued till the forty-fifth. After two days, the running diminished sensibly in the first; it had even disappeared for three days: but it continued still in the two others. The lymphatic glands were in the same degree tumefied.

On the forty-eighth day of treatment, the purgative was given them; but for the jalap was substituted three drachms of nitre.

On the forty-ninth, one of the three purged very little; the other two not at all. They seemed very dull, nauseated their food, and changed for the worse. Mr. St. Bel ascribed those symptoms to inflammation in the stomach



and intestines, occasioned by the use of the medicines; in consequence of which he left them off till the sixtieth day, when he renewed the use of Ethiops mineral and periwinkle, and continued it till the seventieth. At the end of that time, however, the glanders appeared to be incurable in the two last-mentioned horses; they therefore were killed. On opening their nostrils afterwards, nothing new was discovered: the pituitary membrane was ulcerated, as in most of those before opened; the pleura and lungs seemed to be sensibly inflamed; the inflammation was greater in the villous membrane of the stomach, in the pylorus, and the smaller intestines.

As for the first horse, he seemed to be in a fair way of recovery; the matter became transparent, and in small quantity. This discharge was soon suppressed altogether, by injections of lime-water; and the usual medicines were continued till the ninety-sixth. The next day, the Ethiops mineral and periwinkle were discontinued; but the animal was still purged three times in the space of a month. He was then returned to his owner, seemingly in very good health; but the latter sent him back at the end of two months, with every appearance of confirmed glanders. Mr. St. Bel renewed the former treatment for the space of six weeks, to no purpose; the animal was then killed and opened. There were discovered many cankers in the pituitary membrane; but it appeared also, that *many had been cicatrised by means of the injections*. "If," says the professor, "as I had reason to think, all those ulcers which now appeared were new ones, it proves that the seat of the glanders is *not local*, but exists generally in the mass of humours."

VIII. Four fine cart-horses, having caught the glanders on the road from Nîmes to Lyons, were brought to the veterinary school. They were put upon the treatment just described, but without any better success. They were killed at the expiration of two months. The dissection of their bodies furnished nothing deserving of notice.

IX. "A Navarrese horse, nine years old, in the confirmed glanders, was put under the treatment above mentioned, but without being trepanned. The second medicine, administered on the second day, gave him a colic, which was followed by a superpurgation. He immediately swallowed an astringent drink, composed of one ounce of diascordium, one ounce of prepared chalk, and two ounces of honey, boiled in three pints of red wine. This drink was repeated four times in twenty-four hours, but

without success. The animal died on the third day. I discovered, on opening the nose, that the pituitary membrane was ulcerated on the right side only. The zygomatic sinus was filled with whitish and purulent matter. The lungs were slightly inflamed; but the intestines and the stomach were much more so. This last observation proves, that the animal was of a very irritable disposition of body; and that the cathartics had been a real poison to him, as they generally are to all horses, if not administered with the greatest caution."

X. Two horses, the one an English hunter, the other a Neapolitan manege-horse, the first ten years old, the second twelve, having contracted the glanders in the same stable, were submitted to the following treatment.

1. The hair of both was shaved, from the neck down to the buttocks, and as low on each side as the middle of the body.

2. Emollient fomentations were applied all over the body for the space of a week.

3. Frictions of *mercurial ointment* were made over the buttocks, in the quantity of about one ounce at a time. These were continued every other day for twelve days.

4. Four frictions were made on the rump; by one ounce and a half of the ointment, every other day.

5. Two frictions were performed on the loins, with the same dose, and in the same interval of time.

On the twenty-second day of treatment, the parotids began to swell; and, shortly after, the maxillary glands were in the same condition. The frictions were made on the back, from the loins to the withers.

On the twenty-fourth, all the parts of the Neapolitan's head were greatly swelled, and salivation began to take place. On the twenty-fifth, he could not open his jaws. Mr. St. Bel therefore let him bleed twice the same day, repeatedly injected into his mouth barley-water with honey, and gave him the same night a laxative clyster. From this time till the thirtieth, the same treatment was continued; the salivation was abundant, but the stricture in his jaws was taken off on the twenty-eighth. About this time too the swelling of the glands began to diminish, and the animal drank water with nitre dissolved in it.

These means were continued till the forty-first, when it was found that the running at the nostrils had increased, but the fulness of the head and salivation were less. The animal was left quiet till the forty-seventh day, when Mr. St. Bel renewed the frictions in doses of an

ounce; and these were continued till the fifty-seventh day.

On the fifty-eighth, the fulness of the head took place again, and the salivation became copious. To reduce both, the same means were resorted to as had before been employed. The tumefaction and salivation were not so considerable in the English horse. After having undergone this mercurial course, the animals were left to themselves for a month; but the professor, to his great mortification, perceived, that the glanders had rather increased in malignity. He then went on another month, but without success. At length he caused the two animals to be killed. The opening of the nose exhibited, *in a greater degree*, the same ravages that have been often mentioned. The inside of the mouth was a little inflamed, and the excretory ducts of the salivary glands were increased in size.

XI. A charger, nine years old, newly infected with the glanders, was subjected to the same treatment as the two preceding ones. After the eleventh friction, the fulness of the salivary glands became considerable, and the blood flowed to the head with such impetuosity, that it was impossible to prevent the fatal consequences. The animal died within twenty-four hours. He was not opened. Four other horses were subjected, in the course of the same year, to the treatment by mercurial frictions, but without success.

XII. A large draught-horse, seven years old, suspected of having had the glanders six weeks, and which had been previously under the care of a common farrier, was brought to the veterinary school at Lyons, and treated as follows.

1. He was bled at the jugular vein, had some emollient clysters, and tasted nothing but white-water during the space of twenty-four hours.

2. *Spirit of sal-ammoniac* was given, mixed with an infusion of *angelica root*, taking care to keep him well covered in a warm stable. This first dose quickened the circulation, and increased the degree of heat over the whole body, without exciting perspiration. The next day the dose of volatile alkali was increased two drachms, still using the infusion of angelica. The drink was given at six o'clock in the morning, at eight the pulse was high, at ten the perspiration was perceptible, at twelve the sweat was copious, and continued till six o'clock at night. Two emollient clysters were given in the course of the night. The horse's drink was just coloured with wheaten bran. This treat-

ment was observed for the three following weeks. At that period the drink was discontinued for a week, but the clysters were still given. On the twenty-fifth day of treatment, the running had a little diminished, but the lymphatic glands were rather harder.

On the thirty-second, the running was trifling in quantity, and the matter began to be transparent. On the following day, the use of volatile alkali in infusion of angelica was renewed, which produced only a small perspiration. On the same day, the nostrils were injected with a decoction of centaury and gentian, and this was continued till the forty-fourth. During all this time the sweats were sufficiently copious; the urine in small quantity, and of a reddish tint; the excrements hard and dry, in spite of the daily use of emollient clysters, &c. As the animal was much wasted, and appeared weak, he was left to himself till the fifty-fourth, when the injections with lime-water were employed.

On the sixty-second, the running disappeared entirely. The injections were continued for a week, at the end of which the medicines were discontinued. All this time, the cloths which covered the animal were washed and shifted every day; the greatest cleanliness was also observed in every other respect. At the end of a month, he was sent to graze in a low and marshy place; but, after two months, the glanders returned, and he was killed. Mr. St. Bel had no opportunity of opening this animal.

XIII. Four horses, of various ages, differently diseased with the glanders, were successively treated in the method just described, but without any success. The opening of the bodies presented nothing extraordinary.

XIV. A large Swiss horse, seven years old, employed in drawing boats on the river Rhone, having the confirmed glanders, was treated as follows.

1. He was dieted for twenty-fours; after which he had the following dose:

Take of Aloes, six drachms;  
Jalap, two drachms;  
Calomel, one drachm;  
Nitre, five drachms;  
Honey, a sufficient quantity.  
Mix.

Two days after this purge, an incision was made in the skin of the chest, in which Mr. St. Bel introduced some corrosive sublimate, by way of a caustic. The running from this part became very abundant in a few days, the horse being fat and full of humours.



2. He was made to swallow of liver of sulphur half an ounce, incorporated with two ounces of honey. Injections also of lime-water were administered to him twice a-day.

"This treatment was adhered to for the space of six weeks; at which time the running had almost ceased. It seemed, that the evacuation of the humour by the chest had occasioned a sort of *derivation*, or revulsion. Instead of the liver of sulphur, a bolus of balsam of sulphur was now given, and continued for a month; at the end of which time the horse had no running from the nostrils, and seemed to be well. He remained in that condition for two months, when the disease appeared again in a slight degree. This animal lived three years in the infirmary, where he served to carry out the bodies for dissection; but at last died of a consumption, the common consequence of inveterate glanders."

XV. The treatment above mentioned was adopted in the cases of five other horses, but without its having the good fortune to cure any one of them; the particulars therefore do not deserve to be related. Mr. St. Bel says, he restored many horses that were "*thought*," by some, "*to be glandered*," because they had no "*certain criterion for ascertaining the true glanders*;" but he candidly confesses, that he never succeeded "*but in one instance*," in effecting a complete cure of that disease. That instance, however, which might have been more valuable than all these instances of failure, he has not thought proper to detail. Nevertheless, if we are to give him credit for this assertion, in spite of his having withheld the particulars of so inestimable a fact, it will at least serve to strengthen the idea, that the glanders is not an incurable disease in all possible instances.

Mr. St. Bel, in a situation so favourable to trials of that nature, was induced to ascertain the effect of inoculation of the virus of glanders into the bodies of sound animals, as well as the production of the disease, by contact.

1. "Two sound horses, the one fresh from grafs, aged six years, and the other nine years, just come from work, were placed by a horse who had the glanders, drinking out of the same pail, and eating at the same manger. The first shewed evident signs of the glanders at the expiration of thirty-four days. It fully declared itself in the second at the end of six weeks."

2. "Two horses in good health, the one seven, the other eleven, years old, both just taken from work, were placed by a horse who had the glanders. The former caught the dis-

ease, and ran at the nostrils, fifty-two days afterwards, the second in three months."

3. "A horse, thirteen years old, very lean, was made to drink the same water out of the same pail with a horse who had the glanders, and continued so to do for two months; but he was kept from the diseased animal during that time. He did not catch the glanders."

4. "A horse, nine years old, in tolerable condition, placed by a horse who had the glanders in the last stage of the disorder, caught it at the end of forty-three days."

5. "Three old horses, destined to the anatomical investigations of the school, having been inoculated with the virus in the neck, did not catch the disease. This experiment was repeated on various horses of all ages, without producing any effect. It was also performed upon an ox, a sheep, and a dog, without impairing in the least the health of those animals."

6. "The coverings and saddles that had been used to glandered horses, being placed on several horses in good health for a month, and during the heat of summer, did not convey the distemper."

7. "The virus, mixed with a little flour, given to three horses for the space of a week, communicated the disease to the youngest at the end of a month. The two others did not sicken till some time after."

Mr. St. Bel observes, that, only by multiplying such experiments, we shall be able, 1st, To ascertain the *degree* of infection of the glanders. 2dly, To discover the *first symptoms* by which it is announced, and which have escaped our notice to this day. 3dly, We should, by such means, be certain of attacking it in its origin, and might attain to a probable method of cure: "for, notwithstanding my failures," says Mr. St. Bel, "I think that a remedy may be found for the glanders. The animal, vegetable, and mineral kingdoms abound with an infinite number of substances, the combination and rational application of which will, perhaps, in time, overcome those obstacles which have hitherto opposed the progress of the veterinary art, in this and many other diseases. Discoveries wait only favourable opportunities to disclose themselves; and the most favourable are those which are furnished by scientific associations extending their patronage and encouragement for the perfection of the arts."

In concluding the account of his experiments, he observes, that many circumstances have convinced him, that the virus of the glanders has more activity in southern than in

northern countries; and that its progress is more rapid in the mule and the ass, than in the horse; but that the former are not so subject to receive it by infection or contact as the horse is.

We have extended this article to too great a length already to admit of our enlarging on Mr. St. Bel's cases. We have no doubt but our British veterinarians will profit no less by the obvious errors than the useful facts of the French professor, whose *modes of multifarious prescription*, at least, they will avoid, in making experiments to ascertain the power of individual articles of the materia medica over the poison of the glanders. We cannot conclude, however, without giving a short account of the employment of very large quantities of ærugo æris, exhibited internally, with a view to the cure of the glanders, by Mr. Lawson, surgeon to the Oxfordshire Light Dragoons.

The use of verdigrise having been recommended by a professor of the veterinary art, Mr. Lawson gave this medicine a trial in two cases, a horse and a mare, beginning with one drachm daily, and gradually increasing it to one ounce. No apparent effect was produced either for better or worse for nearly three months, at the end of which time the horse was shot as useless. Dissection shewed no disease in the brain, but it was entirely confined to the septum of the nose and nostrils. The verdigrise had produced no apparent inflammation on the stomach or alimentary canal. The mare was kept nearly six months on the same remedy, but with no better effect.

**GLANDULA POPLITÆA**, the part vulgarly called the "*pope's eye*." For this part in the horse, see Plate X. and the description of parts composing the "*right lower limb*," under the article HORSE.

**GLANS PENIS**. This part in all animals is formed by the corpus spongiosum urethræ, which is turned over the corpora cavernosa penis. Its external surface is a continuation of the integuments, and, when the cuticle is taken off, every little villa seems a vessel.

This part, being covered by the prepuce, is liable, under particular circumstances, to be excoriated. Now and then this accident takes place, especially in young horses; but the remedy is easy, as it may be cured by merely washing the parts with a little weak alum water, or with a lotion made of a tea-spoonful of Goulard's extract of lead, and a tea-cupful of rain-water, mixed. A linen rag, wet with either of these, may be left on the part, if necessary.

**GLASS-EYES**, a term used by common farriers to denote the disease called *gutta serena*. See the article EYE.

**GLAUBER'S SALT** (*vitriolated natron*), a genus of neutral salt, in the order of alkaline neutral salts. Its crystals are hexaedra, and contain a great portion of water, spontaneously calcining in the open air. It consists of the fossil alkali and the vitriolic acid.

**GLAUCOMA**, γλαυκωμα (from γλαυκος, *casius*), a fault in the eye, which changes the crystalline humour into a greyish colour. Glaucoma is the same; and both in general signify a change of colour in the eye, without detriment of sight, and therein differ from what is commonly understood by suffusion. Γλαυκος is also by some applied to a whitish urine that hath films in it like transparent horn.

**GLEET**, any purulent habitual discharge from the urethra in a male animal. It is commonly understood to be the *gonorrhœa benigna*; but Dr. Cullen distinguishes it from that, by making it synonymous with *gonorrhœa mucosa*, which name he gives to the discharge from the urethra, after the virulence of an impure gonorrhœa is destroyed.

**GLENOIDES**, γληνοειδης (from γληνη, and ειδος, *forma, shape*), two cavities in the lower part of the first vertebra of the neck in the human subject.

**GLISTER, or CLYSTER**. See CLYSTER.

**GLOBE OF THE EYE**, the parts of the eye taken collectively, the eye itself, or the tunica sclerotica with its contents, which form a globe or ball. See the article EYE.

**GLOBULES**, are such small particles of matter as are of a globular or spherical figure; as the red particles of the blood, which swim in a transparent serum, and are easily discovered by the microscope. It is pleasant to see how these will attract one another when they come within a due distance, and unite like the spheres of quicksilver.

**GLOSSO-PHARYNGÆI**. These muscles are fibres which come from the tongue, running along its internal edges, from which they are parted backward, and run down on the sides of the pharynx, under the stylo-pharyngæi. Also a name of the cephalo-pharyngæi; from γλωσσα, *the tongue*, and φαρυγγις, *the pharynx*.

**GLOSSO-STAPHYLINUS** (from γλωσσα, *the tongue*, and σταφυλη, *uvula*). These muscles are fixed in the lower and lateral part of the basis of the tongue, whence they run up obliquely backward, along the anterior half arches of the septum palati, and terminate insensibly on each side near the uvula. The thickness of



the two anterior arches of the palatum molle is occasioned by these.

GLOTTIS, γλωττις (from γλωσσα, *lingua, the tongue*), is that chink of the larynx that lies at the root of the tongue, and which is covered by the epiglottis.

GLUME, or HUSK, among botanists, a kind of cup, consisting of two or three membranous valves, which are often pellucid at their edges. This sort of cup belongs to the grasses.

GLUS, is a kind of dysuria, called *dysuria mucosa*, purulent urine. It consists of a copious discharge of mucus with the urine.

GLUTÆA ARTERIA, is a branch of the hypogastric artery. It passes out of the pelvis in company with the sciatic nerve, through the upper part of the great sinus of the os innominatum, below the musculus pyriformis, and is distributed in a radiated manner to the three glutæi muscles and neighbouring parts. The course of this vessel in the horse is shewn in Plate X. See description of parts in the "*right lower limb*," under the article HORSE.

GLUTEUS (from γλατος, *nates, the buttock*). In the human subject, there are three muscles of this name which extend the thigh. The first is the glutæus major, or the greater, which arises semicircularly from the os coccygis, the spines of the sacrum, the spine of the ilium, and from a strong ligament that runs between the sacrum and tubercle of the ischium; and, descending, it is inserted into the linea aspera, four fingers breadth below the great trochanter. The medius, or the middle, arises from the spine of the ilium under the former, and is inserted into the superior and external part of the great trochanter. And the minor, or lesser, arises from the lower part of the former, and is inserted at the superior part of the great trochanter. For this muscle in the horse, see Plate X. and the description of muscles in the "*right lower limb*," under the article HORSE.

GLUTEN (quasi *geluten*, from *gelo, to congel*), glue, lentor; that part of the crassamentum of the blood which gives firmness to its texture is so named.

GLYCYRRHIZA, Liquorice. See LIQUORICE.

GOAD, in the manege, the same with valet. See VALET.

GOAT, a kind of cattle, of the genus *Capra*, Linn. The goat takes delight in bushes, briars, thorns, and shady places, rather than in plain pasture-grounds, or open fields. The buck-goat has under his jaws two wattles or tufts, like a beard. His body should be large, his legs

strong, his joints upright, his neck plain and short, his head small, his eyes bold, and horns large and bending. His hair, when thick, clean, and long, is shorn for several uses. He is very salacious, inasmuch that he will cover his own dam, even though she be yet in milk. In consequence of this propensity, he soon decays, and is exhausted before he is seven years old. The female goat also resembles the male, and is valuable if she have large teats, a great udder, hanging ears, and no horns, or at least small ones.

There ought not to be above an hundred of them in one herd: and, in buying, it is better to take several out of one herd; for, when led to their pasture, they will agree better. In their houses, the floor ought to be paved with stone, or else to consist of gravel; for they should have no litter under them, yet must be kept very clean. The chief time of coupling them, or covering with the buck, is in autumn, before the month of December, that so they may bring forth their young at the time when the leaf and grass spring fresh and tender, at which time they will give the more milk. The females bring forth two, and sometimes three, kids at a time.

These animals require scarcely any thing that is chargeable to keep them; for they browse and feed wholly together, as sheep do, climb up mountains, and endure the heat of the sun; but they are not so fit to be about houses as sheep are, as they are much more hurtful to trees and shrubs.

As for their diseases, except it be in a few particulars, they are the same as those of sheep. See SHEEP.

GOING, in the manege, the pace or gait of a horse. See CANTER, GALLOP, &c.

GOLDBEATERS' SKIN, the intestinum rectum of an ox, which goldbeaters lay between the leaves of their metal while they beat it, whereby the membrane is reduced thin, and made fit to apply to cuts or small fresh wounds, as it is now the common practice.

GOMPHIASIS, γομφιασις, is a distemper of the teeth, which makes them loose, and ready to drop, according to Dioscorides; but Hoffman justly enough changes that term into *αγομφιασις*, the primitive particle expressing that defect.

GONORRHÆA, γονορροια (from γονη, *genitura, semen, the seed*, and ρεω, *fluo, to flow*), anciently used for any involuntary emission of seed, but now only for a discharge from the urethra or the vagina, produced there either by laxity or irritation. See GLEET.

**CONORRHŒA MUCOSA**, a gleet. See **GLEET**.

**GORDIUS**, the hair-worm. The gordius aquaticus and the gordius medinensis produce disease by getting into the feet, &c. of the inhabitants of many hot countries.

**GORGED**, a term in farriery, denoting any diffused swelling: to this the horse's pastern joint and legs are liable.

**GORGED**, or **HOVEN**. See the article **CATTLE**.

**GOURD**, **BITTER**. See **COLOCYNTH**.

**GOURDINESS**, the dealer's term for a swelling or thickness of the ligaments in a horse's leg.

**GRACILIS**, a muscle in the horse. See Plate X. and description of the "*right lower limb*," under the article **HORSE**.

**GRAIN**, a weight used in medical prescription. It was originally the weight of a grain of wheat, or a wheat-corn, picked from the middle of the ear. See **WRIGHT**.

**GRAMEN CANINUM**, quich-grafs, couch-grafs, or dog-grafs. It is the *triticum repens*, Linn. This is the kind used in medicine.

**GRAMEN DACTYLUM**, cock's-foot grafs.

**GRAMEN MANNÆ**, manna-grafs. The seeds possess the same qualities as rice.

**GRAMINEOUS HERBS**, amongst botanists, are such as have a long narrow leaf, and no foot-stalk; and those are reckoned frumentaceous whose seed is used for food, either in bread, drink, or broth, such as wheat, rye, barley, &c. According to Linnæus, the gramina constitute one of the seven tribes or families of the vegetable kingdom. They are thus characterised: having the most simple leaves, an articulated culmus, a glumose calyx, and a single seed. This family includes the several kinds of corn, as well as grasses.

**GRANA PARADISI**, grains of paradise, a species of amomum. These are a kind of pepper. They are occasionally employed, with other aromatics, in drenches, balls, &c.

**GRANATUM**, the pomegranate, a species of *punica*. The College hath retained the flower, called the balaustium or balaustine, and the rind of the fruit.

**GRANDINES**, tumours on the eye-lids resembling hail-stones.

**GRANIVOROUS** (from *grana*, corn, and *voro*, to devour), those animals which feed upon corn, or any other seeds.

**GRANULATION**, in chemistry, signifies pouring of melted metal into cold water, so as it may granulate, or congeal into small grains.

It is generally done through a cullender, or a birch-broom.

**GRAPES**, a word sometimes used to signify the arrests, or many tumours in a horse's legs. See the article **ARRESTS**.

**GRAPPLE**, in the manege. A horse is said to grapple either with one or both legs, when he catches or raises them more hastily and higher than ordinary, as if he were curvetting. He grapples with one leg when he raises it precipitately higher than the other, without bending the ham. Hence they say, a horse harps, or grapples, so that he must have the string-halt.

**GRASS**, a well-known vegetable food for cattle of all sorts. The grasses are a very numerous family, though all are not equally beneficial in their culture, some animals preferring one sort, and some another.

The two best species of grafs for pastures are, in Miller's opinion, *C. Bauhin's gramen pratense, paniculatum majus, angustiore folio*, meadow-grafs, with large panicles, and a narrower leaf, which is the *poa paniculâ diffusâ spiculis, quadrifloribus pubescentibus culmo erecto teretri*, Flor. Suec. 77. *Poa* with a diffused panicle, the smaller spikes having four hairy flowers, and a taper erect straw; and *C. Bauhin's gramen pratense, paniculatum majus, latiore folio*, meadow-grafs, with a larger panicle, and broader leaf, which is the *poa paniculâ diffusâ, spiculis trifloribus glabris, culmo erecto teretri*, Flor. Suec. 76. *Poa* with a diffused panicle, small spikes with three flowers, and an upright straw.

These seem to be the great meadow-grasses, and Stillingfleet observes, that they are common in our best meadow-grounds. He has also met with them frequently on banks by the road-side, and near ditches, even where they were not to be found in the adjoining meadows and pastures.

If the seeds of these two sorts were carefully collected and sown separately, without any mixture of the seed of other grafs, they would not only afford a greater quantity of fodder on the same space of land, but the grafs would also be better, the hay sweeter, and the verdure more lasting, than that of any other species.

The annual meadow-grafs makes the finest of turfs. It grows every-where by way-sides, and on rich sound commons. It is called in some parts the *Suffolk grafs*. Stillingfleet says, he has seen whole fields of it in High Suffolk, without any mixture of other grasses; and, as some of the best salt butter we have in London



comes from that country, it is most likely to be the best grafs for the dairy.

As the next best to meadow-grafs, Miller recommends Ray's *gramen avenaceum pratense elatius, paniculâ flavescente, locustis parvis*, taller meadow oat-grafs, with a yellowish panicle and small husks, which is the *avena paniculâ laxâ, calycibus trifloris brevibus sfofculis omnibus aristatis*, Prod. Leyd. 66. Oat-grafs with a loose panicle, three flowers in each impalement, which is short, and all the flowers having awns. Mr. Ray likewise recommends the smooth mountain oat-grafs, which he calls *gramen avenaceum montanum spicâ simplici, aristis recurvis*, found by Mr. Dale upon Bartlow-hills in Essex, on the edge of Cambridgeshire, in the borders of the corn-fields between Newmarket and Exning, and on the chalk-hills between Northfleet and Gravesend; and the rough or hairy oat-grafs, which he distinguishes by the appellation of *gramen avenaceum hirsutum, paniculâ purpureo argenteâ splendente*, and which abounds in the pastures about the earl of Cardigan's house at Twickenham, in Middlesex. He also includes under this genus all the festuca kinds, of which Mr. Stillingfleet gives an account in his Observation on Grasses, subjoined to his translations of several ingenious tracts, selected from the Transactions of the Academy of Upsal. Our business, however, is not with the culture of grafs, but with its properties as an article of food.

Gibson considers grafs and the other green herbage, of which our fields afford sufficient store of various kinds, to be the most natural food of horses, as well as of many other brute creatures; yet he thinks grafs alone not sufficiently nourishing for a horse destined to hard labour, without an addition of dry provender. Most spare horses in the country, however, are kept at grafs, both to save charge and trouble, and for the most part do well, especially those that are habituated to that kind of living. Many gentlemen keep their hunters abroad all the year, where there is a stable in some convenient dry field, with hay at all times for them to come to when they please, and where they can shelter themselves from the inclemency of the weather. These horses are seldom sick or diseased; and as they move and rest themselves at pleasure, so their limbs are always clean and dry; and, with a feed or two of corn, they will do their morning's work, and go through a chace as well, and frequently better, than those that are kept constantly in the house, and have a great deal of airing and dressing bestowed on them.

Farmers keep most of their horses abroad in the winter, where they take their chance till the frost and snow come on, or very rainy weather, when the grounds grow potchy, and then they fodder them in their yards, or near their houses, so as they can come into the stables or under shades, which some build for the convenience of their cattle.

But those who have not such conveniences of their own ought to be at some pains in procuring grafs for their horses, and proper places for them to run in during the winter, when they have no use for them, especially such as live in London or other great towns. But it is necessary that the grafs be sweet; for rank four grafs is rather worse than the hay that comes off the same ground, provided it happens to be well got and in a good season, the noxious qualities in the herb being in some measure evaporated in drying. That grafs is always reckoned the best which is short, thick, and on dry but on fertile ground that needs little manure, especially such as has always been made use of only as pasture. Therefore most horses thrive better on commons, or on the grafs that grows near commons, than on meadows that have been often mowed, and have had great crops of hay taken off them from time to time, and therefore must either be manured or sowed afresh with clover. For though horses will grow fat upon such grounds when they have good water, yet they are not apt to hold their flesh, nor to stand so well afterwards, unless in very dry seasons, when they feed altogether on the root, on which bare pasture horses will grow extremely fat.

Gibson thinks the fields which lie near great towns, and that are much dunged, cannot be so proper either for hay or pasture, as those that lie more in the country, and are not so much forced or exhausted with heavy crops; and he says he has often observed, where the grounds were naturally poor, that though they are made to yield plentiful crops to the owner, yet it often proves injurious to the horses that feed upon them, especially if they run the whole summer. We cannot, however, see any good reason for this supposition.

In another place this judicious writer notices more particularly the advantages which horses usually receive from feeding on grafs, and points out which of these stand most in need of, and are most benefited by it. Such, he observes, as have stood long in the stable, glutted with food, suffocated with heat and want of air, and enervated for want of exercise, though

clean fed, are nevertheless apt to grow full of humours; and these require a considerable run at grafs before they are fit for business. Indeed, grafs, as it is their most natural food, is a great benefit to them; and, when horses do not thrive at grafs, it is often owing to some mismanagement, which requires to be looked into and rectified. We have, however, already noticed this part of the subject under the article Food.

This writer's observations concerning the use of grafs, as a remedy in morbid cases, are very judicious. He says, that grafs gives great relief to broken-winded horses while they continue abroad, "not only because they are always in the open free air, and ranging at pleasure about the fields, but because their diet is also both soft and cooling, and passes more easily through them than hard meat, besides that grafs does not so much excite them to drink;" so that those persons who can conveniently keep such horses always abroad, and only take them up when they have occasion to use them, and after that turn them out again directly, may thus preserve them in tolerable health, and they will continue, under prudent management, to do good service for many years. Such, however, as send their horses to grafs with a view to *cure* them of broken wind, will find themselves greatly disappointed, especially if they are left to remain abroad after the spring grafs; for, in that case, as soon as a horse is brought back to stand in the stable, being deprived of the pure air and his natural diet, he will become much more oppressed and short-breathed than before. "Instances of this kind," says Gibson, "are frequent, as also of horses that have been sent to grafs to cure an *obstinate cough*, and have returned from thence completely broken-winded, especially where they have been turned into a succulent rich pasture, and have grown fat, and had their bellies always full; and the oftener such horses are turned out, the worse they always become: and therefore those who have not the convenience of grafs near their houses will find it more for their interest to keep such horses always at home, under some proper and exact management, especially if they are young, and otherwise worth the care and expence that may be necessary to preserve them; and if a cool open diet should be judged wanting, they may be fed a month or six weeks in the spring with green barley, tares, or any other kind of herbage fit for soiling, especially while it is young and full of juice; for, if it happens to be old and tenacious, it will be little better than their

own dirty litter, and more likely to promote than prevent a broken wind."

GRATIOLA, hedge-hyssop, a genus in Linnaeus's botany. He enumerates six species, besides varieties. The College have introduced the *gratiola officinalis* into their Pharmacopœia.

GRAVEDO, a dull pain in the forehead. It is synonymous, in Cullen's Nosology, with catarrh. It is that weight or listlessness which accompanies a lessened transpiration, or taking cold, as it is commonly called; and, as it is frequently accompanied with a running of the nose and eyes, it is used for a coryza, which expresses the same.

GRAVELLING, the intrusion of gravel into the feet of a horse. This, Mr. John Lawrence says, takes place chiefly through the nail-holes. He describes it to be one of the many ill consequences of the common method of shoeing, according to which the shoes are hollow, and apt to admit and retain the gravel, the sole being at the same time pared so thin that small stones easily penetrate: hence the horse halts, and endeavours to go upon his toes, and the hoof becomes inflamed; but as other accidents, such, for instance, as an ill-shaped clumsy shoe pressing upon the heel, may occasion similar inconvenience, we are advised not to suffer the sole to be cut away rashly, under the idea of searching for gravel. "But, should there really be gravel, it must needs be drawn out by manual operation, on account of the spiral form of the hoof, which occasions any substance admitted to work upwards towards the coronet; whence a quittor may arise. This shews very clearly the folly of the old practice of stopping up a gravelled foot by night, and suffering the horse to travel on. Having, by moderate pinching, found the offending matter, get it all out as clean as possible with the drawing knife. Your success will be known by the disappearance of the blackness; wash and deterge well with warm beer, in which is melted some soap."

Mr. Lawrence follows Bracken in the subsequent treatment; but we apprehend, when the cause is effectually removed, that the most lenient applications are the best. To the remedy he has placed last in the catalogue, we should therefore be inclined to give precedence; and should recommend "poulticing the whole foot," rather than the more severe method of dropping into the wound "*burning oil of turpentine*." In extreme cases, indeed, the treatment recommended under QUITTOR may be expedient.



## GRE

**GRAVID.** A woman is said to be fo whilst with child, or a brute animal with young.

**GRAVIDITY,** pregnancy; also an extraordinary distension of the abdomen during pregnancy.

**GRAY, or GREY COLOUR.** See the article **COLOUR.**

**GREASE,** an inflammation and swelling of the heels of horses, sometimes confined to the neighbourhood of the fetlocks, at other times spreading considerably further up the legs, and secreting an oily matter, to which the disease is probably indebted for its name. The discharge has a particular odour, owing, we imagine, to the secretion of the heels being of a nature peculiar to them, as in the instance of the axilla of the human subject. Horses of the heavy class, with round fleshy legs, are the most liable to grease, and the white legs more than the rest. The disease is almost exclusively found in the posterior extremities.

Grease is brought on by sudden changes from a cold to a hot temperature: such as removing horses from grass into hot stables; from hastily substituting a generous after an impoverishing diet; from the negligence of grooms, in leaving the heels wet and full of sand; and from constitutional debility. The reason which has been assigned for the hind-leg of the horse being particularly the seat of this complaint is, the distance being greatest between that and the heart, in consequence of which the blood's circulation is weakest in these parts, and the pressure of its column overcome with the greatest difficulty by the vessels.

On the approach of this disease, and for several days previously to any striking appearances of swelling and inflammation, considerable pain seems to be experienced by the animal in the affected heel, as he is continually raising it from the ground, and cannot rest upon it without much uneasiness. At this early period the complaint may in general be carried off by a poultice of boiled bran and linseed powder constantly applied to the part, and kept moist with warm water; giving every night, or every second night, a mild diuretic, with plentiful exercise on dry and clean ground.

Where, however, there already exists considerable inflammation, the poultice, as before directed, may be used, and a diuretic of a rather strong quality, or else a purgative, may be administered as often as the state of the case shall seem to require. When the urgent symptoms have abated, and the inflammation has

apparently ceased, the heel may be washed, four times a-day, with the following solution:

Take of Rain or distilled water, one quart;  
Alum, in powder, three ounces;  
Vitriolated zinc, half an ounce.  
Mix.

Should there exist any ulceration, it will generally be found to heal by the astringent power of this application; but, if it prove tedious, look foul, and have an offensive smell, pledgets of tow or lint, spread with the following ointment, may be retained on the surface of the sores until they assume a healthy aspect, and may then be discontinued:

Take of Ointment of yellow resin, two ounces;  
Verdigrise, in fine powder, half an ounce. Mix.

In cases of grease, attended with debility and want of condition in the animal, medicines of a purgative or diuretic tendency may be thought improper, as contributing to the debility. Instead of these, something of an alterative quality should rather be preferred, as the following:

Take of Antimony, in fine powder,  
Flowers of sulphur, of each, six ounces;  
Linseed powder, two ounces;  
Honey, sufficient to form a mass for twelve balls.

One of these should be given once or twice a-day. The diet should be generous, and the clothing and exercise plentiful.

Obstinate cases of grease may very frequently be cured by withholding the horse's allowance of water for two days, or even a longer period; let him then be ridden into the sea, and his extreme thirst will most probably induce him to drink pretty freely, notwithstanding the unpleasant flavour of that element. In this case, the salt-water will be found to act as an useful laxative and alterative. The process must be frequently repeated, wherever it may not appear injurious to the horse in any material respect.

We have introduced the latter simple method to the notice of the reader, having been assured of its efficacy from a respectable quarter, and that it afforded great benefit to a number of horses belonging to a regiment situated in a maritime quarter. Further trials certainly are required to establish it as a suitable remedy in these cases, and we have no doubt but many of

our ingenious brethren will pay due attention to the hint. The greatest objection that can be entertained against it seems to be the circumstance of depriving the horse of his regular supply of fresh water, which exclusion might, in some instances, be productive of injurious consequences. Would it not be a preferable plan to *drench* the horse very liberally with the sea-water, while fasting, in the morning? And, as some advantage is supposed to be also acquired by immersing the heels in it, he might afterwards be taken into the sea for that purpose only. Somewhat analogous to this means of curing the grease, in its earlier stages, is the practice of turning the horse into a salt-marsh (see MARSH). A run of a few months, indeed, on a salt-marsh, will frequently eradicate very tedious cases of grease, and where other and more active remedies have been tried in vain. Another method of cure we can strongly recommend, namely, turning the horse to grass, his heels being previously blistered.

There are but few cases of grease, in fact, that will not yield to one or other of the above methods of cure. The strength of all applications to the heels must bear a proper proportion to the irritation and inflammation apparently existing: and it is necessary to remark, that different medicines, though of a similar tendency, are often required; as any particular formula, when long made use of, is apt to lose its original power. We shall, of course, add a few other recipes, as substitutes for each other, as their qualifications become diminished.

Take of Rain or distilled water, one quart;  
Sugar of lead, six drachms;  
Vitriolated zinc, half an ounce.  
Mix.

Take of Rain or distilled water, one quart;  
Vitriolated copper, one ounce.  
Mix.

Take of Rain or distilled water, one quart;  
Vitriolated zinc, one ounce and a half. Mix.

Sometimes, indeed, applications in the form of lotions do not succeed so much to our wishes as the materials in a dry state; at such times powders may have a superior effect. We recommend the following:

Take of Alum, in fine powder, four ounces;  
Vitriolated zinc, one ounce.  
Mix.

Take of Alum, in fine powder, four ounces;  
Vitriolated zinc,  
Vitriolated copper, of each six drachms. Mix.

Take of Alum, three ounces;  
Vitriolated zinc,  
Acetated ceruse, of each six drachms.  
Rub them together into a fine powder.

After the heels have been well washed with soft soap and warm water, any of these powders may be slightly rubbed on the diseased parts; but it must be recollected that they are seldom or never admissible where the inflammation is great, and they are only to be considered as the means of invigorating and of bracing the skin, with the vessels by which it is supplied.

Cases of grease have occurred in which the swelling was excessive, the discharge offensive beyond description, and the surface of the heels has been covered with numberless enlargements resembling grapes. When reduced to this miserable situation, it will, in general, be observed that the horse is accounted of little or no value; and indeed, as the disease has acquired an habitual influence, we may mitigate, but we can seldom exterminate it.

The horny substance which is frequently formed on the heels of horses, in consequence of grease, should be removed either by the knife or by the actual cautery, as being offensive to the sight, and giving strangers a disposition to suspect that the animal is more liable to the disease than he really may be.

As preventives for the above disease, proper exercise, with attention to cleanliness, and rubbing the heels perfectly dry when coming into the stable, are principally to be depended upon. The legs of some horses are apt to swell at particular periods, but generally at the approach of winter; to such, a few diuretics will be serviceable, and will probably prevent the intrusion of grease. Where any debility exists, the habit must be strengthened with nourishing diet and plenty of gentle exercise. We are informed, however, that horses that have *never* had the hair cut from their heels are scarcely ever found to suffer from the grease. If this be the fact, it is probably owing to the protection which this natural covering forms against the wet, dirt, and cold.

Although moderate friction, and such as produces a due warmth on the surface of the heels of a horse, is beneficial, yet, when the friction is carried to an extreme, and applied by means



of hard substances, such as coarse straw strongly twisted, &c. the grease, instead of being prevented, will be promoted, by the inflammation which this rude treatment will be apt to produce.

**GREASE MOLTEN.** See **MOLTEN GREASE.**

**GREEN OINTMENT**, a kind of salve, used in the cure of ulcers in horses, whereof there are several sorts. One is made as follows :

Take of Rosin,

Yellow wax, of each the quantity of  
a walnut ;

Having melted them, add of

Lard, half a pound ;

Honey, a spoonful ;

Turpentine, half a pound ;

Verdigrise, in fine powder, an  
ounce.

Stir all together, putting the vessel upon the fire, till the matter begins to simmer ; then take it off, strain it through a cloth, and keep it for use.

This ointment is useful in cleansing wounds, and procuring a good discharge.

**GRIPES**, or **COLIC.** See the article **COLIC.**

**GRISTLE**, another name for Cartilage. See **CARTILAGE.**

**GROGGINESS**, a stiffness produced in the foot of a horse by battering the hoof on hard ground. Swelling of the leg and contraction of the sinews often succeed. A horse bearing all upon his heels in his trot is styled *groggy*, and the defect is generally incurable.

**GROOM**, a man who looks after horses. Mr. Lawrence states the duties of a groom to consist in "dressing, dieting, exercising, and administering physic" to them. He should demean himself after so gentle and so kind a manner towards his horses as to cause them to *love him* ; for a horse is the most attached to man of all other brutes, and in every respect the most docile and obedient to his will. Hence, if dealt with mildly and gently, kindness will be reciprocal ; but, if the groom or keeper be harsh and cholerick, he will put the horse out of patience, make him rebellious, and occasion his biting and striking. So attentive should a person who has the care of horses be to this circumstance, that he should frequently dally and play with them, talk to them, giving them good words, and lead them out occasionally for their diversion in cheerful weather. He must also duly curry-comb and dress each horse, wipe away the dust, pick and clean him, feed, pamper, and cherish him ; and constantly employ himself in doing something about him, such as looking to

his heels, taking up his feet, rubbing upon the soles, &c. He ought, indeed, to keep his coat well dressed and shining ; his feet should be stopped and anointed daily, his heels freed from scratches and other sores. In fact, he should have a watchful eye over him and all his actions, as well when feeding as drinking, so that no complaint or injury may befall him, without his being able to discover it, and apply a remedy.

The qualifications necessary in a groom are obedience, fidelity, cleanliness, patience, diligence, and good temper. He ought to love his horse in the next degree to his master ; and endeavour to obtain, by fair usage alone, his implicit obedience. If he knows, indeed, how to act in this manner towards his master, he will the better be able to teach it his horse ; and both the one and the other are to be obtained by fair means, rather than by passion and outrage. For those who are so irrational themselves as not to be able to command their own passions, are not fit to undertake the reclaiming of a horse, which is by nature an irrational creature. He must, then, put in practice the patience which he ought at all times to be master of ; and by that, and fair means, he may attain his end ; for no creature, as has been observed, is more tractable than a horse, if he be used with kindness.

The next thing requisite to a groom is neatness, as to keeping his stable clean swept and in order. The saddles, housings-cloths, stirrups, leathers, and girths, should be kept perfectly clean. Great diligence is requisite in the daily discharge of this and the foregoing duties. But, above all, his vigilance is required to make the earliest discovery of any the smallest change, whether casual or accidental, either in his countenance, as symptoms of sickness ; or in his limbs and gait, as lameness ; or in his appetite, as forsaking his meat ; and immediately upon any such discovery in the horse, to seek out a suitable remedy.

This is, in substance, the duty of a groom. Mr. Lawrence has treated of the duties of a groom and horse-keeper under the same head. We shall, however, reserve other particulars, which apply to them in common, for the article **HORSE-KEEPER.**

**GROUND-IVY**, or **GILL**, *Glechoma*, a well-known herb, noticed by Gibson as an useful remedy in complaints of the chest, broken-wind, &c. in horses. He says, the dried leaves should be given in powder ; and that it is an "admirable ingredient in pectoral balls," when joined with balsamic remedies. We doubt its virtues.

**GROUND-PINE**, the *Iva*, or *Portugal Myrtle*. "This herb," says Gibson, "takes place in several compositions for horses, and is reckoned a good restorative, and very effectual in healing inward ulcers."

**GRUME**, a thick viscid substance, nearly fluid, or what we call ropy, as the white of an egg, or clotted like cold blood.

**GRUMOUS BLOOD**, is that which is too thick for circulation, and stagnates, as in bruises.

**GUAIAIACUM**, a genus in Linnaeus's botany. He enumerates three species and one variety. The College have retained the wood, the bark, and the gum-resin of the *guaiacum officinale*, Lin. in their Pharmacopœia. The wood enters the decoctum sarsaparillæ compositum; of the gum-resin, a tincture, tinctura guaiaci, is directed, formerly called tinct. guaiaci vol. It also enters the pulvis aloëticus cum guaiaco. Gum guaiacum has been frequently prescribed for horses, and is commended by Gibson and others in cutaneous diseases, and in the Farcy.

**GUILLET**, another name for the œsophagus (see *ŒSOPHAGUS*). The inner membrane of this part in the horse is not continued on to the stomach; the latter, at its superior part, being covered with an *insensible* membrane, to which those troublesome worms called *botts* always attach themselves. See the article *BOTTS*.

**GUM**, **GUMMI** (*tsamah*, pronounced *ghamah*, Hebrew), Gum, called also Gissim. It is a concrete vegetable juice, of no particular smell or taste, becoming viscous and tenacious when moistened with water; totally dissolving in water into a liquid, more or less glutinous in proportion to the quantity of the gum; not dissolving in vinous spirits or in oils; burning in the fire to a black coal, without melting or catching flame; suffering no dissipation in the heat of boiling water.

The true gums are, gum arabic, gum tragacanth, gum senegal, the gum of cherry and plum trees, and such like. All else have more or less of resin in them.

The virtues of gums are similar to all mucilaginous substances in general, vegetable and animal; the more tenacious glutinous vegetable productions are called gums, those that are less so are mucilages. The first distil naturally from trees, the second are the produce of art. When the ancients used the word *gummi*, or *commi*, without any other word to restrain their signification, they meant gum arabic. For accounts of the different medicinal gums, see their proper names.

**GUM ARABIC**, called also *acanthinum gum*, *lamar*, the true gum acacia. It exudes from the Egyptian acacia, or thorn-tree, whose fruit affords the inspissated juice of that name. This gum is brought from Turkey in small irregular masses, of a clear whitish or very pale yellow colour.

It does not dissolve in spirit nor in oil; yet, when it is softened with water into a mucilage, it is easily miscible with both, also with resins, and renders them miscible with water. Apothecaries mix essential oil with water by means of gum arabic; and, from a variety of experiments, it appears, that oils, both expressed and distilled, resins, balsams, &c. may, by the same means, be mixed uniformly with water or with spirit. Alkaline salts, both fixed and volatile, though they render pure oil miscible with water, prevent the mixture of gum with oil. Acids do not in the least prevent the effect of the gum in this particular.

Animal glues have the general qualities of the vegetable gums, with this difference, that the former are more nutritive, and apt to run into a putrid state. Considered as the subject of chemistry, their difference is very great: those of the animal kind are changed by fire into a volatile alkaline salt, and a fetid oil; the vegetable into an acid liquor, and a very minute portion of oily matter, considerably less fetid than the former.

The medical character of gum arabic is its glutinous quality, in consequence of which it serves to obtund acrid humours, and proves useful in coughs, in fluxes of the belly with gripes, in the strangury, and where the mucus is abraded from the bowels or from the urethra. In a dysuria the true gum arabic is more effectual than the other simple gums, and should be preferred. It is, however, by some authors, and with apparent probability, only supposed to act as an internal demulcent in the alimentary canal, notwithstanding the formerly prevailing doctrine of the much greater extent of its demulcent power and action.

One ounce of gum arabic renders a pint of water considerably glutinous; four ounces give it a thick syrupy consistence; but for mucilage one part gum to two parts water is required, and for some purposes an equal proportion will be necessary.

**GUMMA** (from *gummi*, *gum*), plur. *Gummata*; so called from the resemblance of their contents to gums. It is a tumour arising out of the substance of a bone, but so soft as to yield to the finger. When these tumours are harder,



## G U N

they are called *τοποι*, *tophs*; when harder still, they receive the name of *νοδι*, *nodes*: but the hardest tumours in bones are *exostoses*. They seem to be produced by the vessels running between the bony laminæ being either obstructed or inflamed, being dilated, and so raising the incumbent laminæ. Perhaps the bone degenerates too into a morbid softness. A softness of the bones sometimes succeeds abscesses of the adjacent parts, and sometimes the origin of the disorder is lodged in the substance of the bone. Gummata have, however, been discovered in the human subject when no such adequate cause could be observed. Perhaps there is an acid cacochymy, or a partial degree of what causes the *MOLLITIES*.

**GUMS, GINGIVA**, a hard sort of flesh, formed by the union of two membranes, one of which is the production of the periosteum, and the other of the internal membrane of the mouth. They are set about the teeth, to keep them firm in their sockets.

**GUNSHOT**, a description of wounds requiring a peculiar treatment. See the article *WOUNDS*.

## G U T

**GUSTATORII**, a name of the ninth pair of nerves.

**GUSTATORIUS**, a name of the third maxillary branch of the fifth pair of nerves.

**GUTS**, technically named *intestines*, or *bowels*, when spoken of collectively. See *ANATOMY* and *INTESTINES*.

**GUTTA**, a drop. Also a name of the apoplexy; from a supposition that its cause was a drop of blood falling from the brain upon the heart.

**GUTTA SERENA**. See *EYE*.

**GUTTURALIS ARTERIA**. The first considerable branch of the external carotid is the superior guttural, which arises just where it parts from the internal, and runs to the thyroid gland, and to the muscles and other parts of the larynx or pharynx. The inferior guttural artery is the tracheal artery.

**GUTTURALIS VENA**, the right goes from the upper part of the bifurcation above the mammae of the same side, and sometimes from the subclavian. The left from the left subclavian, near its origin.

## H.

### H A B

**HABENA**, the old name of a kind of bandage, contrived to keep the lips of wounds together.

**HABIT**, in physiology, any particular disposition or temperament of body, obtained by birth, or manner of living. The ancients distinguished *εἶς*, a constant permanent habit, from *διαθεσις*, a present disposition, soon liable to alter.

This term, when applied to the temper and disposition of horses, has a different meaning. We find experimentally, that brute creatures will contract what we call habits, as well as men; and that these may be improved or amended, as well as made worse. When the viciousness of a horse proceeds from his natural disposition, it is easy to gather some signs of it

from his countenance: yet the signs which authors have given us about the temper of horses proceeding from this or that colour, is as erroneous as the doctrine of temperaments or humours in human bodies of this or that complexion.

Bracken says, the most sure and certain way to be satisfied whether a horse has any natural or acquired habits is by *trial*. Among horses, we find some brisk and active, and of a quick apprehension, as well as retentive memory, whilst others are dull and sluggishly stupid. Some are calm and gentle, others are fierce and furious; some are skittish and fearful, others are resolute and bold; and, lastly, though a horse may be of an excellent disposition and temper, yet he may be rendered quite the re-

### H A B

verse by falling into bad hands; and it may be a very difficult matter to remove such bad habits, acquired from the carelessness or want of understanding in the owner or keeper. It is evident, with respect to horses as well as men, that their tempers alter with their years. It is even observed by some authors, that colts have been affected in their tempers by the pastures they go in; as that pasture which produces long and four grass inclines a colt to sluggishness, and one that is more sweet and airy makes him grow more lively and mettlesome, in proportion to his size and lineage.

The breaking and subsequent management of colts lays a foundation for good or bad habits; for there is nothing more difficult than to remove any habit of a long standing, more especially if such habit has been contracted early. See **BREAKING**.

**HACK**, or **HACKNEY**, the general term for a road-horse. Mr. Richard Lawrence observes, that it by no means conveys any sense of inferiority, or refers exclusively to horses let out for hire.

“He who possesses a thorough-bred hack or hunter, sufficiently short-legged, lively, and active, which bends its knees, and goes well above the ground, and has found tough feet, has perhaps obtained every qualification he can wish for the road, except trotting; which he must never expect, in any extraordinary degree, in a bred horse. But horses of such a description are not common, because unfit for the turf; and nobody, as yet, has bred racers expressly for other purposes. The disadvantage of bred cattle for the road or field are, too great delicacy, rendering them susceptible of harm from wet and cold; tenderness of legs and feet; too great length of leg and thigh, and pliability of sinew, which gives a more extensive compass to their strokes than is convenient to the common business of riding, or even of hunting; their stride also, natural sluggishness, and tender feet, occasion them to be unsafe goers.

“Which then is the most proper species for the road? or rather, since it is agreed that blood is absolutely necessary, how much ought a hackney to have? We believe he ought either to be three parts bred, as much as to say, one got by a racer out of a half-bred mare, or *vice versa*; or one which is produced from good-shaped hackney-stock on both sides, both sire and dam having some blood. We incline to the latter. In these mediums you may secure sufficient delicacy, symmetry, speed, and continuance, without any of the disadvantages attend-

ant upon full blood. The produce of three-parts bred mares and race-horses (which might be called seven-eighths bred, if we wanted a new term) have too generally all the disadvantages of the latter, without the benefit of their peculiar qualifications.

“The ancient prejudice of the superior fitness of the land of one English county above another for the production of hackneys, and the supposed pre-eminence of Yorkshire, Northumberland, and Durham, has been of late years fully and completely exposed. The isle of Ely, Norfolk, and Suffolk, have for some years past bred the best hacks and the fastest trotters in England. It follows not, however, from thence, that equally good stock may not be bred in any of the other counties, provided they have as good stallions and mares, and pursue the business with as much industry.”

**HÆMA**, αἷμα, blood.

**HÆMATAPORIA**, a wasting from a poverty of blood.

**HÆMATITES** (αἱματῖτης, from αἷμα, blood). The Greeks call this ore of iron thus, from its supposed virtue of stopping blood. It is also called *blood-stone*. When it was in flattish cakes, with knobs on the surface, then the ancients called it *hæmatites*; but when it was in long striated pieces, they called it *schistus*: but these possess no distinguishing qualities different from each other. The terra sinopica is also called *blood-stone*. In Edwards's Fossilogy it is called *iron-stone*, and is described as of a fibrous structure.

**HÆMATOCELE** (from αἷμα, blood, and κηλη, a tumour), a species of false hernia in the scrotum. It consists of a collection of blood in the tunica vaginalis; its appearance is the same as when a hydrocele is the disorder.

**HÆMATOCELE ARTERIOSUM**, the same as aneurism. See **ANEURISM**.

**HÆMATOXYLUM**, logwood, or Campeachy wood, a genus in Linnæus's botany. There is but one species. The College have retained the Lignum Campechianum in the Pharmacopœia; an extract, *Extractum Ligni Campechensis*, is directed.

**HÆMATURIA**, bloody urine. It is always symptomatic.

**HÆMOPTYSIS** (αἱμοπτῖσις, from αἷμα, blood, and πῖσις, to spit), a spitting or discharge of blood from the lungs.

**HÆMORRHAGE**, a flux of blood from any part of the body. An hæmorrhage from an external injury is only to be stopped by taking up the vessel which discharges the blood by a ligature, or applying styptics (see **STYPTIC**),



to occasion its contraction. See the article WOUND.

**HÆMORRHODIALIS EXTERNA ARTERIA.** See PUDICA.

**HÆMORRHODIALIS INTERNA ARTERIA:** this gives the inferior mesenteric. See MESENTERY. It soon divides into branches, one of which runs down behind the intestinum rectum, to which it is distributed by several ramifications, and it communicates with the arteriæ hypogastricæ.

**HÆMORRHODIALES EXTERNÆ VENÆ,** the external hæmorrhoidal veins. They spread about the intestinum rectum and anus; and proceed from the hypogastricæ venæ: they communicate with the hæmorrhodialis interna.

**HÆMORRHODIALIS INTERNA VENÆ.** It is also called the *lesser mesaraic vein*. It is one of the great branches of the venæ portæ ventralis, though sometimes it springs from the splenica; it sends a branch to the duodenum from near its beginning; then it is divided into two branches, one of which ascends, the other descends; the descending branch runs down on the left portion of the colon, on its lower incurvations, and on the intestinum rectum, to the anus. The hæmorrhoidal veins have no valves.

**HÆMORRHOIDES** (*αιμορροιδες*, from *αιμα*, blood, and *ρηνω*, to flow), a bleeding of the hæmorrhoidal veins. They also swell and inflame the parts about them, without bleeding: these produce piles in the human subject.

**HÆMORRHOIS,** the same as hæmorrhoides.

**HAIR,** the natural covering of the body in almost all quadrupeds. In them it may be justly reckoned one of the common integuments of the body, not only for its use, but also because it is to be found upon all the parts of the body, except the soles of the feet. It grows longest upon such parts as most immediately need this kind of defence from accidental injuries. When we examine hairs with a microscope, we find that they have each a round bulbous root, which lies pretty deep in the skin, and which draws their nourishment from the surrounding fluids; and often each hair consists of five or six others, wrapped up in a common tegument or tube. They grow as the nails and hoofs of animals do, each part near the root thrusting forward that which is immediately above it, and not by any liquor running along the hair in tubes, as is the case with plants. Their different colours cannot be accounted for. The use of the hair is at once calculated for a covering and an ornament to the body of an ani-

mal. Some, however, go the length of supposing that the colour of a horse affects his qualities; but this is exceedingly doubtful, if not wholly inadmissible. See COLOUR.

**HALBERT,** in the manege, a small piece of iron, one inch broad and three or four inches long, foldered to the toe of a horse's shoe, and which projects out before, so as to prevent a lame horse from resting or treading upon his toe. These halbert-shoes usually do harm.

**HALTER,** a head-stall of leather, mounted with one and sometimes two straps, with a second throat-band, if the horse is apt to unhalter himself. The string or strap of a halter (*longe*) is a cord, or else a long strap of leather, made fast to the head-stall and to the manger, to tie the horse.

**HALTER-CAST,** an accident producing an excoriation of the pastern. It is occasioned by the halter's being entangled about the foot, upon the horse's endeavouring to rub his neck with his hinder foot. For the cure of this, take vinegar and brandy, of each an equal quantity; shake them together, and wash the part affected morning and evening, having first clipped away the hair; but take care to keep the foot very clean. Another easy remedy is, to wash the part with lead-water, or weak alum-water. If the fetlock of a horse that is cast in his halter be much inflamed, apply the following poultice: Boil turnips till they are tender; squeeze out the water, and chop them in a wooden bowl with two or three ounces of hogslard; put this into a cloth, and tie the foot in it, leaving it all night. These accidents may be often prevented by fastening a block of wood at the end of the halter.

**HALTING,** in a horse, an irregularity in his motion, arising from a lameness or other injury in the shoulder, leg or foot, which leads him to spare the part, or use it timorously. Halting in a horse happens sometimes before, and sometimes behind. If it be before, the disease must necessarily be in the shoulder, knee, pastern, flank, or foot. If it be in the shoulder, it must be toward the withers, or the pitch of the shoulder; and this may be known by his drawing the leg after him a little, and not using it so nimbly as he does the other.

If he throws it more outward than the other in going, it is also a sign of lameness in the shoulder. The rider should then take him in his hand, and turn him short, first one way, and then the other; and it will be easily seen which shoulder the pain is in, for he will either favour that leg, or trip in the turning. The lameness may sometimes be evident in him

while standing in the stable; for he will there hold the lame leg out more than the other. If he is worse when the rider is on his back, it is probable that the complaint is in the withers; and this may be soon tried, by pressing down the saddle, and pinching him in that part; for, if this be the case, he will flinch at it, and probably he will offer to bite. If the complaint be seated in the *knee*, the only way of making this out is in his going; for he will seem to be stiff of this, and not move it so freely as the other. If the complaint be in the *flank*, or *skin-bone*, it may be seen or felt, being a back-sinew strain, splinter, or the like. If in the bending of the knee, it is probably a malander, and that also is easily discovered. When the pastern or lower joint is affected, it will be seen by his not bending it so freely as the other; and generally, if the hand be laid upon the place, it will be found to be very hot. If the complaint be in the *foot*, it must be situated either in the coronet or sole: and, if in the coronet, it probably came by some strain or wrench; if it be in the *hoof*, by some over-reach or distemper in or about the frog; if it be in the *sole*, it probably arises from some nail or prick from shoeing.

These are the methods of judging of the cause of a horse's halting, and that often leads very directly to the cure; when a great deal of time and cost might otherwise be thrown away in applying remedies, as has often been done, to a part a yard or more distant from the seat of the disorder. Solleysel says, the surest way to know if a horse halts is, to make him trot along a paved street or causeway in hand.

HAM. See HOUGH.

HAND, in the manege, the measure of a fist clenched, by which we compute the height of a horse. The French call it *paume*. A troop-horse should be sixteen or eighteen hands high. The terms *spur-hand*, or *sword-hand*, mean the horseman's right-hand; but *bridle-hand* is the horseman's left-hand. There are several expressions which relate to the bridle-hand, because that hand gives motion to the bit, and best serves to guide the horse.

The rider ought to hold his bridle-hand two or three fingers above the pommel of the saddle. A horseman is said to have *no hand*, if he makes use of the bridle unseasonably, and does not know how to give the *aids* or *helps* of the hand with nicety. To *keep a horse upon the hand*, is to feel him in the *stay* upon the hand, and to be prepared to avoid any surprise or disappointment from the horse. A horse is said to *be*, or *rest*, upon the hand, that never refuses, but al-

ways obeys and answers the motions of the hand, and knows their meaning.

To make a horse *right* upon the hand, and free in the *stay*, he must be taught to know the hand by degrees and gentle methods. The horseman must turn him, or change hands; stop him, and manage with dexterity the *appui* or pressure of his mouth, so as to make him suffer cheerfully and freely the effect of the bit, without resisting, or resting heavy upon the hand.

The short or *hand gallop* teaches the horse to be right upon the hand. See GALLOP.

A horseman should have a *light hand*, that is, he ought only to feel the horse upon his hand, in order to resist him when he attempts to slip from it. He ought, instead of cleaving to the bridle, to lower it as soon as he has made resistance. If a horse, through an overbearing eagerness to go forward, presses too much upon the hand, you ought to slack your hand at certain times, and keep a hard hand at other times, and so disappoint the horse of pressing continually upon the bit. Now this facility, or liberty in the horseman, of slacking and stiffening the hand, is called a *good hand*.

To *slack* or ease the hand is to slacken the bridle; to hold up or sustain the hand is to pull the bridle in; to guide a horse by the hand is to turn or change hands upon one tread.

A horse is said to *force* the hand when he does not regard the bridle, but runs away in spite of the rider. To make a horse part from the hand, or suffer him to slip from the hand, is to put on at full speed. To make a horse part right from the hand, he should not put himself upon his back or reins, but bring down his hips.

*All hands* is a term applied to a horse that turns upon all hands, upon a walk, trot, or gallop.

To *work a horse upon the hand* is to manage him by the bridle, without interposing any other helps excepting those of the calves of the legs as occasion requires.

*Fore-hand* and *hind-hand* of a horse is an expression distinguishing the parts of a horse, as divided into the fore and hind parts, by the situation of a horseman's hand. The parts of the fore-hand are the head and neck, and the fore-quarters; those of the hind-hand include all the other parts of his body.

HARD-HORSE, in the manege, a horse that is insensible of whip or spur.

HARNESS, all the accoutrements of an armed horseman; also all manner of trappings,



furniture, collars, &c. fitted to horses or other beasts for drawing.

**HARNESS-GALLS.** Sometimes the breasts of coach-horses are galled by the harness, or rise in hard bunches, especially in rainy weather. To cure this, apply the remedies mentioned under the articles EXCORIATION and COLLAR.

**HARRIER**, a species of dog. See DOG.

**HARTSHORN.** See CORNU CERVI.

**HAUNCH**, the HIP of a horse, or that part of the hind-quarter which extends from the loins to the hough or ham. The haunches of a horse are reckoned to be too long, if, when standing in the stable, he limps with his hind-legs further back than he ought, and that the top or onset of his tail does not answer in a perpendicular line to the tip of his hock, as it always does in horses whose haunches are of a just length. However, there are some horses which, though they have too long haunches, yet will commonly walk well; such are good to climb hills: but, to balance that, they are by no means sure upon a descent; for they cannot ply their hams, and they never gallop slowly, but almost at full speed.

The art of riding has not a more necessary lesson than that of *putting a horse upon his haunches*, which, in other terms, is called putting him well together, or compact. A horse that cannot bend and lower his hips throws himself too much upon his shoulders, and hangs heavy upon the bridle. A horse is said to be thoroughly managed when he bears well upon the hand, knows the heels, and falls well upon his hips.

**HAW**, the *membrana nictitans* of an animal (see the articles EYE and NICTITANS). Its appearance over the eye of a horse, when affected with inflammation, has led to an erroneous opinion, that it is a diseased production, and should be extirpated. Accordingly, we find directions for that purpose in many of the books of farriery. Thus Gibson says, "Haws grow sometimes in eyes that are not naturally bad, after surfeits and cold, but moon-blind horses indeed are seldom without them; and wherever this symptom appears, that the haws grow large and spongy, and derive a drain of humours upon the eye, the operation becomes necessary, and is performed by taking hold of the membrane with a small hook, and cutting off so much of the caruncle as looks moist and spongy, with part of the membrane and gristle that make a pressure on the eye. When this operation is well performed, it does great service,

and often recovers horses that are not subject to cataracts. The operation is easy, and what almost every farrier pretends to; but the farriers are apt to cut off too much of this substance, and by that means weaken the eye."

**HAY**, grass cut and dried for provender (see FOOD). With respect to the horses of this country, none are better fed; we have, perhaps, the best corn and hay that is to be met with in any country. Our oats, when they are well ripened or kiln-dried, make a more hearty and durable diet than barley, and are much better suited to the constitution, as we find by experience. Our climate being temperate, the hay is generally well got, without excessive heat, oftentimes in dry weather, with fine fresh breezes, and without much sunshine; in consequence of which it retains all the virtues of the plant. "Though it is become a proverb," says Gibson, "*to make hay while the sun shines*, yet this ought to be understood, not to lose the opportunity of fair weather; for hay and all other herbage is best when dried in the *shade*. Indeed, some parts, from the nature of the soil, produce but indifferent hay, and in very wet seasons a great deal of hay is spoiled; yet the rains are seldom so universal but that we have always sufficient for our best horses, and seldom want grass of various kinds in the season, as often as it is required; so that if our horses suffer by their diet, it is not so often owing to the quality of their food as to the quantity, either giving them too much, or too little, in proportion to their labour."

That sort of hay is the best and most wholesome which is hard, of a pale green, and of a fragrant agreeable smell. This kind is always to be preferred to that which is soft and without flavour; though in some seasons, and in some particular places, the hay will be good and sweet when much of the flavour is lost, which frequently happens by its standing too long on the ground waiting for fair weather, or for want of hands to get it in; and this is pretty universal when the rains fall immediately before the hay-harvest, or in hot scorching suns without clouds.

When hay is forced to be got in in very wet weather, a great deal of it is apt to be *mow-burnt*. Gibson observes, that horses will eat this sort of hay as soon as any for a change, unless when it happens to be very much burnt indeed: nor do they receive any injury from it in general; though he confesses, that he should not choose to give mow-burnt hay for a constancy, because it is apt to make some horses

costive. However, he often allowed, and even preferred, it for sick horses, when they would relish no other.

New hay is never reckoned fit for any but working horses; for, till hay has undergone the process of sweating out its superfluous moisture, it is found to be unwholesome: some reckon it not fit to be given till the spring. Mr. John Lawrence says, he has been informed, that salt strewed upon the mow, when making, in the quantity of about a quarter of a pound to every three hundred weight of hay, will correct the damp, prevent mould, and render the hay more nutritious and relishing.

**HEAD**, that part of an animal which contains the brain. An account of the bones which compose the head of a horse is given under the article **BONES**. See also the plates of the anatomical figure of the **HORSE**.

The diseases of the head, properly so called, have their origin and immediate cause from the head, and are not, as in the case of staggers and convulsions, merely symptomatic. Of this kind are all those which proceed from extravasated matter discharged out of the veins or arteries upon the brain or its membranes, whether this be the effect of wounds or concussions, or proceed from any other cause by which the vessels of the brain may be ruptured. Sometimes the membranes themselves are indurated, and grow preternaturally hard and distended by long-continued obstructions, so as to press upon the tender substance of the brain. This may also be owing to some previous accident or disease. In some old animals the membranes have been found ossified, and incapable of their functions, causing great disorders in the head. Sometimes these proceed from a determination of blood, when the circulation through the vessels and sinuses of the head happens at the same time to be sluggish. This last is generally owing to a *plethora*, or too great quantity of blood in the system, which is often the case with horses that are fed high, and have neither had sufficient exercise, nor other proper means used to preserve their blood and juices in a proper state. From these and such-like causes proceed most of the diseases peculiar to the head, such as apoplexy, vertigo, lethargy, epilepsy, paralytic disorders, and all others where the nerves are so affected as to impede sense and motion. See **APOPLEXY**, &c. &c. and also, under their several names, the account of those disorders of the head that arise from the affections of remote parts, and which, among farriers, usually go under the name of **STAGGERS** and **CONVULSIONS**.

**HEAD**, in the manege. The head of a horse should be small, narrow, and lean. A horse that has a large head is apt to rest and loll upon the bridle, and, by that means, in a journey, tire the hand of the rider; and, besides, he can never appear well with a large head, unless he has a long and well-turned neck.

Sometimes the term *head of a horse* imports the action of his neck, and the effect of the bridle and the wrist. It is said of a horse, that he plants his *head* well, and obeys the hand; that he refuses to place his *head*, shoots out his nose, and never rests right upon the hand; or else that he carries his *head* well.

**HEAD-ACH**. This has had a particular place among the diseases of the head, described both by the physicians and the farriers. The last have made no distinction; but the former have distinguished between a head-ach which they term *idiopathic*, as it proceeds from a cause unconnected with the blood-vessels; and that which they call *sympathetic*, being the concomitant of some other disease: but our business here is only with the first kind, since the other is but a symptom, which must of course cease with the disease which occasions it.

As to the cause, it is believed to proceed from nervous irritation, or else from a distraction of the fibres of some blood-vessels in the brain or its membranes.

The signs are, according to Markham, the hanging down of the horse's head and ears, dropping of his urine, dimness of sight, swollen watery eyes: but these are common to some other diseases; and it is, in fact, difficult to conceive that such a head-ach can be easily distinguished in brute creatures that want the faculty of speech to declare their sensations. However, if a horse has such symptoms, without a fever, and if it be observed that he often puts his head against the stall or manger, as if to relieve pain, it will be very proper to have recourse to some remedy. For this purpose, Gibson recommends bleeding, purging, and rowelling. Perhaps the first two may be sufficient.

**HEAD-MOULD-SHOT**, is when the sutures of the skull, generally the coronal, ride; that is, have their edges shot over one another: which is sometimes the case in young animals, and occasions convulsions and death.

**HEALTH**, is justly defined the faculty of performing all the actions proper to an animal body in the most perfect manner; and all the effects of these actions are such as regard certain determined motions, or the change and alteration of what is received into the body. See **DISEASE**.



Gibson says, it ought to be laid down as a sure maxim, that, when a horse is in good plight, that is, when he eats his allowance of hay and corn, drinks a moderate quantity of water, endures exercise well, without being faint and dispirited; when his exercise does not take him off his stomach, but rather quickens his appetite, when his coat lies smooth and looks well, we may reasonably conclude such a horse to be in health. To give him medicine then, to prevent sickness, must in a great measure be superfluous, if not hurtful. Yet some are not satisfied when the horses have all their usual signs of health, but order them to be bled and purged often, whether they really stand in need of it or not, according to an absurd custom, which seems to prevail with us more than with any other nation. Others think their horses cannot continue in any degree of health without cordial balls, which are generally given with a view to carry off imaginary surfeits, to create a good appetite when it is not wanted, and to preserve their wind when it is in fact in no danger. These balls being, for the most part, made of aromatic and carminative seeds, &c. though in the small doses usually exhibited, are frequently needless, and in some cases certainly hurtful, especially to horses of inflammatory constitutions; for these, above all others, require a cool regimen on all occasions.

**HEARING.** The organs by means of which the sense of hearing is exercised have been described in the article **EAR**. Sound is nothing but a certain modulation of the external air, which, being gathered by the external ear, passes through the meatus auditorius, and beats, as is supposed, upon the membrana tympani, which moves the four little bones in the tympanum. In like manner as it is beaten by the external air, these little bones move the internal air which is in the tympanum and vestibulum; which internal air makes an impression upon the auditory nerve in the labyrinth and cochlea, according as it is moved by the little bones in the tympanum: so that, according to the various reflections of the external air, the internal air makes various impressions upon the auditory nerve, the immediate organ of hearing; and these different impressions represent different sounds. The curious structure of the labyrinth and cochlea render the weakest sounds audible; for the whole organ of hearing being included in a small space, had the auditory nerve ran in a straight line, the impression had been made upon a very small part of it; and the strength of the impression being, *ceteris paribus*, always as the number of parts upon which the

impression is made, sounds which are now low could not have been heard at all. If the auditory nerve had, like the retina, been expanded into a large web, which had covered or lined some wide cavity, the impressions of sounds even in this case had been much weaker than they are now: for this large cavity affords room for the sounds to dilate, and all sounds grow weaker as they dilate. Both of these inconveniences are prevented by the present structure of the labyrinth and cochlea, whose canals, by their winding, contain large portions of the auditory nerve, upon every point of which the smallest sound being at once impressed, becomes audible, and by their narrowness the sounds are hindered from dilating; and the impressions made upon the nerves by the first dilatations are always the strongest. The strength of the impression in narrow canals is likewise increased upon the account of the elasticity of the sides of the bony canal, which, receiving the first and strongest impulses of the air, do reverberate them more strongly upon the auditory nerve.

**HEART**, in anatomy, a musculous part of the body, contained in the thorax or chest, wherein the veins all terminate, and from which all the arteries arise; and which, by its alternate contractions and dilatations, is the chief instrument of the circulation of the blood, and of the principle of life.

This noble part is included in a capsula or bag, called the pericardium, consisting of a strong membranous substance, inclosing the heart like a purse, and of use only to defend it from the frictions of the lungs, and to contain a moisture to keep it smooth, and render its motion the more easy. The figure of the heart is a cone, broad at bottom, and narrow at top. In a horse it is not so large as in a bullock, nor proportionably so broad towards its basis. Its fibres are very compact, and laid close together, having a twisted spiral direction, especially towards its top, where it somewhat resembles the contortion of a snail's shell. It is fixed to some of the vertebræ of the thorax, or rack-bones of the breast, by the large vessels that go to and from it. Its point inclines a little downwards towards the left side, where it is received into a depression of the left lobe of the lungs, which perhaps may be formed in the foetus by the position of the heart, before the lungs have been filled with air. The heart is nourished and maintained by its own proper vessels, called the coronariæ, because they surround its whole substance like a crown or garland. It has a middle partition, which divides it inter-

nally into two ventricles or caverns: the left is smaller than the right, and its sides much thicker; its office being to drive the blood to the most distant parts of the body, whereas the right ventricle detaches it only through the lungs. Its inside has several small chords or compages of fibres, called columnæ carneæ, which resemble the bundles of columns which we perceive in Gothic buildings, and help to comminute and break the grosser parts of the blood in the frequent contraction of the heart. The contraction and dilatation of the heart is called its systole and diastole. The first, when the vertex or top of the heart is drawn down to its basis, to send the blood into all parts; and the latter, when it opens and dilates itself to receive the reflux blood.

The heart has its auricles, which are so called because they resemble two ears, and are seated at its basis, one on each side to receive the blood at its entrance; the right from the ascending and descending trunks of the cava, and the left from the pulmonary veins, by which it enters in due portions, and so as it may not rush in with too much violence, and in too great quantity, to interrupt the regular action of the heart: for, when the auricles are full, the heart is empty; and, when the heart is full, the auricles are empty. The auricles, in their mechanism and structure, somewhat resemble that of the heart, only that they are chiefly membranous, whereas the heart is altogether fleshy; for, if it was tendinous in any part, as most other muscles are, it would be altogether unfit for its office. When the two trunks of the cava open into the right auricle, there is a little eminence or rising, which prevents the blood of the ascending and descending trunks from rushing together, and causes it to slip more gently into the ventricle; and the coronary veins likewise opening into its entrance, with the reflux blood from the heart, may probably render this the more necessary. The large vessels which empty the blood into the heart, and those which receive the blood from it, have each of them valves, whereby the blood is forwarded in its passage, but cannot return back the same way it came. Thus the vena cava, which enters into the right ventricle, has three, called tricuspidæ, being like so many points of a spear or lance. These point inwards, so as to open a free passage for the blood into the right ventricle of the heart. The pulmonary artery, which receives the blood from the same ventricle into the lungs, has also three valves, called sigmoidæ, from their resemblance to the Greek letter Σ. These look

from within outwards, by which they hinder the blood returning back again into the heart. The pulmonary vein has two valves, called mitrales; these have the same office as those of the cava above described, being to hinder the blood returning back again into the lungs: and the valves of the aorta, or great artery, called semilunares, have the same office as those of the pulmonary artery, viz. to prevent the blood, by which it is detached into all the other parts of the body, from returning into the heart.

The use of the heart is sufficiently deducible from what has been already said in its description; the heart being the vital fountain which receives the blood from all the rivulets of the body, dispenses it back again through its proper channels, for the support and nourishment of every part. For that end, its structure is very different from all other muscles, especially those that move particular parts: for as these are partly fleshy and partly tendinous, or have their fleshy fibres end in tendons of a closer texture, the heart, on the other hand, is altogether fleshy, and made up of fibres so exquisitely fine, and so closely compacted together, that it is by that means endowed with all the force that is necessary for its function; and its basis is the most compact of all its other parts, where probably its fibres have both their origins and insertions in the membranous coats of the large blood-vessels to which it adheres, rising spirally upwards and turning again downwards arch-ways, in the like direction over the ventricles, which seems best to correspond with its dilatation and contraction. But if we enquire by what means the heart comes to be endowed with such a capacity of action, wherein we ourselves have not the least share, we must confess our ignorance, and ascribe this wonderful piece of mechanism to the great Author of nature.

In the hearts of horses that have been opened, sometimes there happens, as in the human body, collections of matter within the pericardium, sometimes polypuses in the great vessels, and sometimes a mass of greasy fat, especially in the left ventricle. For an account of the blood's course, &c. see the articles CIRCULATION and BLOOD-VESSELS. In Plate I. is shewn two views of the heart and its vessels.

Fig. 1. *A View of the Heart and Blood-vessels.*

- 1 The right ventricle of the heart of a foetus injected with wax.
- 2 The right auricle.
- 3 The left auricle.
- 4 Branches of the pulmonary veins of the



right lobe of the lungs, those of the left being cut off short.

- 5 The arteries of the left lobe of the lungs.
- 6 The vena cava descendens.
- 7 Aorta ascendens.
- 8 Arteria pulmonalis.
- 9 Ductus arteriosus.

Fig. 2. *Another View of the Blood-vessels.*

- 10 The umbilical vein.
- 11 Branches of the vena portarum in the liver.
- 12 Ductus venosus.
- 13 Branches of the cava in the liver.
- 14 Vena cava.

HEART-BURN. See CARDIALGIA.

HEAT, a quality of bodies, very difficult of explanation. It is a symptom in many diseases, as fever, inflammation, &c. Men can live in a much greater heat than that of their own bodies, which, in a healthy state, is commonly estimated to be about 97 degrees of Fahrenheit's thermometer. When air is considerably heated, the human body is capable of generating cold: this fact was observed by governor Ellis, as long ago as the year 1758. The late professor Cullen has long ago suggested many arguments to shew, that living animals have a power of generating heat, independently of any common chemical or mechanical means, either of fermentation or friction, and also of generating cold or of destroying heat, when the heat of the atmosphere exceeds the proper temperature of their bodies. To ascertain this theory, Dr. George Fordyce instituted several experiments on himself, in rooms heated to various degrees by fires in the floor. In his second experiment, having undressed himself in his shirt, he went into a heat of 119 degrees, and in half a minute the water flowed down his whole body in streams: having remained there fifteen minutes, he went into the heat of 130 degrees; at this time the heat of his body was 100 degrees, and his pulse beat 126 times in a minute; in this heat he remained fifteen minutes, and, just before he left the room, his pulse beat 139 times in a minute, but the heat under his tongue, in his hand, and of his urine, did not exceed 100 degrees. Dr. Fordyce observes, on this experiment, that there was no evaporation, but constantly a condensation of vapours on his body, and no cold was generated but by the animal powers. In another experiment, Dr. Solander stood in a room heated to 210 degrees, for three minutes, during which time the quicksilver in the thermometer sunk to 196 degrees; and Mr. (now sir Joseph) Banks remained seven minutes

in the heat of 211 degrees, in which time the quicksilver had sunk to 198 degrees. The heat of their bodies in these experiments rose very little above its usual state. From these experiments, it is concluded, that no attrition, fermentation, or whatever else the mechanical or chemical physicians have devised, can explain a power capable of producing or destroying heat, and that this power must be referred to the principle of life itself.

HEAT, a term used by gentlemen of the turf, to denote a certain distance which a horse runs on the course. A race may consist of one or more *heats*. See MATCH.

HECTIC (from *εἶς*, *habit*). This term may strictly be applied to any thing that is become habitual; but it usually implies that kind of fever which is slow and almost continual. This is the reverse of those fevers which arise from a plethora, or too great a fulness from obstruction; because it is attended with too lax a state of the excretory passages, and generally those of the skin. How far brute animals are capable of this form of fever is not well ascertained. Celsus is the first who speaks of a *hectic fever*: what were afterwards called *slow hectic fevers* were among the first physicians called *tabid* or *long-continued fevers*, or *marasmi*. Dr. Cullen does not rank this kind of fever as a genus, but considers it always as symptomatic.

HEDYSARUM, a name of the *scœnum Græcum sylvestre*, or *fenu grec*. See FÆNUGREEK.

HEEL OF A HORSE, the lowest hind-part of the foot, comprehended between the quarters, and opposite to the toe (see FOOT). For the diseases of the heels, see the articles CHOPS, SCRAUCHES, &c.

HEEL OF A HORSEMAN, in the manege, the part that is armed with the spur; though the word heel is often taken for the spur itself. It is said of a horse, that he understands the heels well, he knows the heels, he answers the heels, &c. the meaning of all which is, that the horse obeys the spurs, which in effect is flying from them. To ride a horse *from one heel to the other* is to make him go sideways, sometimes to one heel, and sometimes to another: for instance, having gone ten paces in flying from the right heel, you make him, without stopping, go still sideways in flying the left heel; and so on alternately.

HELIX (from *εἰλεω*, *to turn*), a spiral line. The external circle or border of the outer ear in the human subject.

HELLEBORE, a plant of which there are two species, the *veratrus albus*, Linn. or *white hellebore*, and the *helleborus niger*, Linn. or *black*

**hellebore.**—1. The former plant grows spontaneously in Switzerland, and the mountainous parts of Germany. The root has a nauseous, bitterish, acrid taste, burning the mouth and fauces: wounded when fresh, it emits an extremely acrimonious juice, which, mixed with the blood by a wound, is said to prove very dangerous: the powder of the dry root, applied to an issue, occasions violent purging: snuffed up the nose, it proves a strong and not always safe sternutatory. This root, taken internally, acts on the human stomach with extreme violence as an emetic; and has been observed, even in a small dose, to occasion convulsions. The ancients sometimes employed it in very obstinate cases, and always made this their last resource. Modern physicians seem to have almost entirely rejected its internal use, though some have lately ventured upon so large a dose as a scruple, in maniacal cases, and found good effects from it, after the stronger antimonial preparation had been given in vain. It is, however, now seldom given internally; it is in a great measure confined to external uses in diseases of the skin, and in these complaints it has been found serviceable to brute animals. As, when applied to the human stomach, it is a very irritating medicine, and may, from being injudiciously applied, produce very dangerous effects, its action on brute animals seems to deserve investigation.

2. The *black hellebore* also grows wild in the mountainous parts of Switzerland, Austria, and Stiria. The earliness of its flowers, which sometimes appear in December, has gained it a place in our gardens. Its effects a good deal resemble those of the white hellebore; and it is said to be the principal ingredient in the *Ormskirk medicine*, a pretended remedy against madness both in dogs and in the human species. The reputation of this absurd composition has been grounded on a deception similar to that which has given importance, amongst ignorant persons, to dipping animals supposed to be mad in the sea—though bitten, they were not infected.

**HEMICRANIA** (*ημικρανία*, from *ημισ*, *femis*, *half*, and *κρανιον*, *cranium*, *the skull or head*), a pain that affects only one half of the head at a time.

**HEMIPLEGIA** (*ημιπληγία*, an hemiplegy, from *ημισ*, *femis*, *half*, and *πλησσω*, *percutio*, *to strike or seize*), a palsy, or any nervous affection relating to it, that seizes one side at a time, from some partial disorder of the nervous system. See **PALSY**.

**HEMIPLEXIA**, *ημιπληξία*, the same as Hemiplegia; or, according to some, when one

half of the body is affected after the manner of an apoplexy.

**HEMLOCK.** See **CICUTA**.

**HEN**, the female of the gallinaceous tribe. Her anatomical structure may be learned by consulting the article **FOWLS**. Her diseases are but little known or attended to. See an account of a kind of worm which attaches itself to the wind-pipe in these animals, under the article **WORMS**.

**HEPAR**, by Martinus and Gorræus derived from *επειν*, *to work*, and *εαρ*, *blood*, upon a supposition that it was to prepare the blood; the **LIVER**.

**HEPATALGIA**, inflammation or pain in the liver or its region.

**HEPATIC** (*ηπατικός*, from *ηπαρ*, *the liver*), an epithet for any thing belonging to the liver.

**HEPATICA**, a pain of the right hypochondrium, or region of the liver.

**HEPATICA MINOR VENA**, a branch from the vena portæ ventralis; or sometimes it is a branch of the cystic vein.

**HEPATIC ARTERY.** As soon as this artery leaves the cœliaca, it runs to the upper and inner part of the pylorus, sending off two branches, called *pylorica*, and a larger one called *gastrica dextra*, or *gastrica major*. Having sent out these two, it advances behind the ductus hepaticus, towards the vesica felleis, to which it gives two branches, called *arteriæ cysticæ*, and another, called *biliaria*, which are lost in the great lobe of the liver. Afterwards this artery enters the fissure of the liver, and joins the vena portæ, with which it runs in the capsula glissonii, and accompanies it through the whole substance of the liver by numerous ramifications, which may be termed *arteriæ hepaticæ propriae*.

**HEPATIC DUCT.** See **LIVER**.

**HEPATIC FLUX**, a bilious diarrhœa, occasioned by an excess of bile.

**HEPATICO-CYSTIC DUCT.** That side of the body of the gall-bladder, in the human subject, which lies next the liver, is connected to that viscus by a number of filaments which run a great way into its substance; and among these filaments there are some ducts which form a communication between the pori bilarii and the gall-bladder. These ducts are most numerous about the neck of the gall-bladder.

**HEPATITIS**, inflammation of the liver. See **LIVER**.

**HERBER**, a term used by farriers to denote an application for some diseases in horses, par-



ticularly of the head. It consisted only of a piece of hellebore-root, which, being put into the skin, acted like a rowel or seton.

HERBS, properly speaking, are those plants whose stems perish annually. An *herb*, in the Linnæan system, is that part of a vegetable which arises from the root, and is terminated by the fructification. It comprehends, 1. The trunk, which serves to multiply the herb, and leads immediately from the root to the fructification: it is clothed with the leaves, and terminated by the fructification. 2. The leaves, whose office is to transpire and attract, like the lungs in animals, and to afford shade. 3. The fulcra, or props, which serve as stays to strengthen the plant; but may, however, be taken off without destroying it. 4. The hybernacula, winterings, or the bulbs and buds, each of which is a compendium of the herb upon its root before it begins to grow. Herbs supply some of our most important medical remedies.

HEREDITARY DISEASE, is such as is transmitted from the parents in the first rudiments of the foetus, which, in the human subject at least, is the origin of many chronic cases.

HERMAPHRODITE (*ερμαφροδιτης*, from *Ερμης*, *Mercury*, and *Αφροδιτη*, *Venus*), generally understood to be an animal exhibiting a confusion of the sexes, by a participation of the genital parts of both. The existence of these has been doubted by some, but with how much reason will appear from what follows.

The FREE-MARTIN is an undoubted hermaphrodite production. Of this animal, the late Mr. Hunter gave a most ingenious account in different papers read before the Royal Society, and which he afterwards published, with other facts relative to the animal economy, in a collected form.

"As the distinction of male and female parts," says he, "are natural to most animals, as the union of the same animal is also natural to many, and as the separation of them is only a circumstance making no essential difference in the structure of the parts themselves, it becomes no great effort or uncommon play of nature sometimes to unite them in those animals in which they are commonly separated; a circumstance we really find takes place in those orders in which such an union is unnatural."

Hence the author is led to divide them into two classes, the *natural*, and the *unnatural*; of which he proceeds to describe the circumstances. [Vide *Animal Econ.* 2d edit. p. 56.]

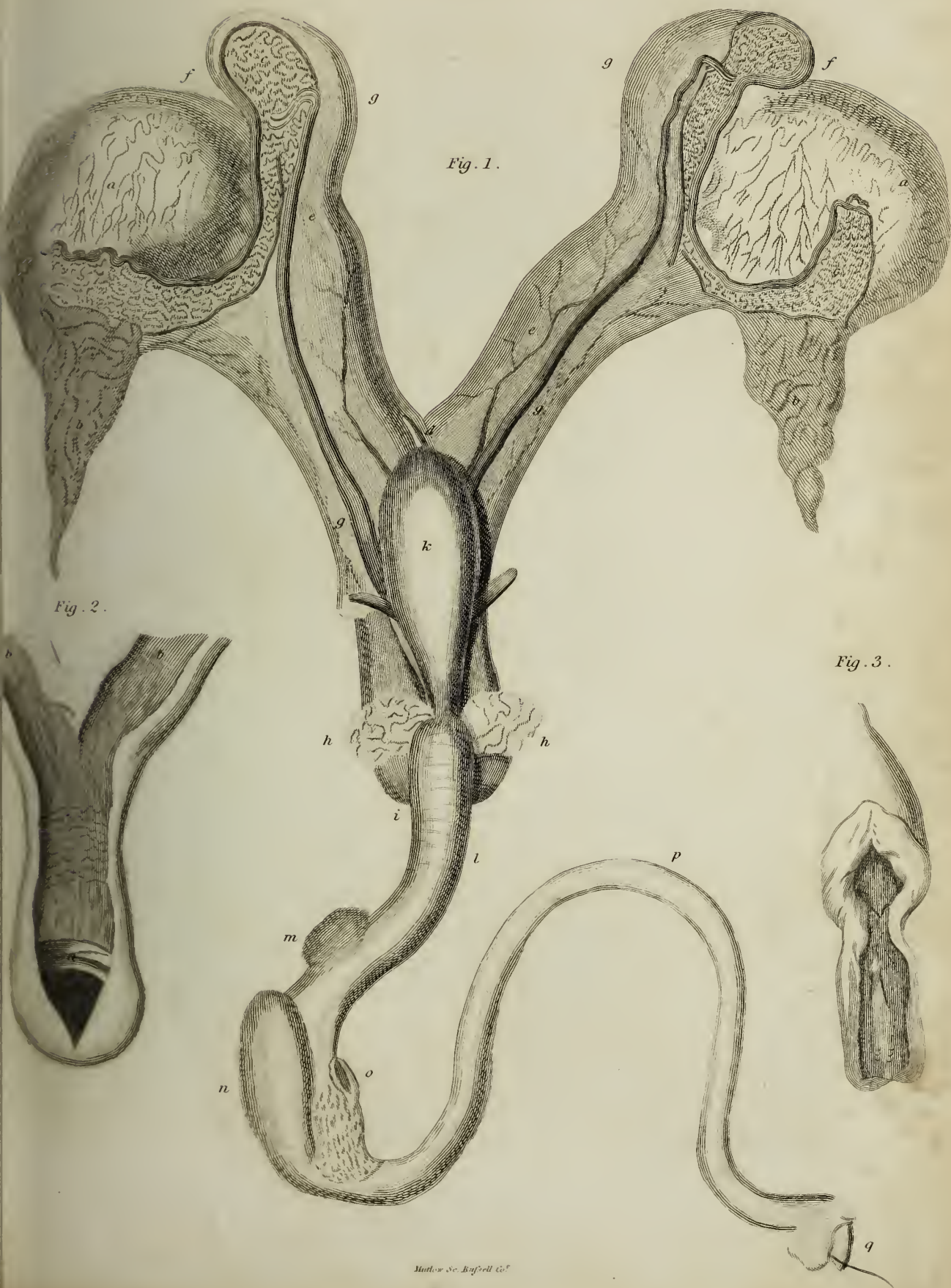
"The hermaphrodites which I have seen," continues he, "have always appeared externally, and at first view, to be *females*, from the penis being the part principally deficient, and there being an opening behind, like the bearing in the female; and as the testicles in such hermaphrodites seldom come down, the udder is left to occupy its proper place."

"Among *horses* such hermaphrodites are very frequent: I have seen several, but never dissected any. The most complete was one in which the testicles *had* come down out of the abdomen into the place where the udder should have been (viz. more forward than the scrotum), and, though not so pendulous as the scrotum in the perfect male in such animals, had all the appearance of an udder. There were also two distinct nipples, which, although they exist in the male, have no perfect form, being blended with the sheath or prepuce, of which there was none here. The external female parts were exactly similar to those of the perfect female; but, instead of a common-sized clitoris, there was one of about five or six inches long, which, when erect, pointed almost directly backwards."

Mr. Hunter afterwards met with and dissected a foal-afs, whose external parts were like those of the horse just described, except that the testicles had not descended, probably from the early age of the animal. He gives the appearances on dissection [p. 58], and observes, that these cases afford a proof, that the parts peculiar to each sex sometimes are found in the same animal, although very imperfect in their form, and that part common to both, but different in each, constituting a kind of medium of that difference. He adds, that he has seen peculiarities of this sort in sheep, goats, &c. but confines his future remarks to the "hermaphrodites in black cattle," which are the more singular, as this deviation appears to be "almost an established principle in their propagation," and peculiar, perhaps, to that species of animals.

"It is a fact known," says he, "and, I believe, almost universally understood, that, when a cow brings forth two calves, one of them a bull, and the other, to all appearance, a cow-calf, that the latter is unfit for propagation, but the former grows up to be a very proper bull." Such a deviation, however, may be produced without the circumstance of twins; "and even when there are twins, the one a male, the other a female, they may both have the organs of generation perfect." The cir-

*Parts of an Hermaphrodite Lamb.*







cumstance most worthy of notice, he adds, is "a singularity in the mode of production of the free-martin," and its being, as far as is yet known, "peculiar to black cattle."

The free-martin has all the external marks of a cow-calf, as in the unnatural hermaphrodite above mentioned, viz. teats, and the external female parts called by farmers the *bearing*; and, when they are preserved, it is only for the purposes of an ox or spayed heifer. They shew no inclination for the bull, nor the bull for them. In form they resemble the ox or spayed heifer. Their bellow is like that of an ox. They fatten soon on good keep; and their flesh, being more delicious, is sold by the butcher at a higher price: this, however, is not always the case, nor does every fact mentioned respecting the production of these animals invariably obtain.

Mr. Hunter particularly describes three instances, those bred by Mr. Wright, Mr. Arburthnot, and Mr. Wells, which, he thinks, point out most distinctly the *complete free-martin*, with the gradations towards the male and female distinguishable in each. Vide *Animal Econ.* p. 62, and the beautiful delineations which accompany them.

In vol. II. of the "*Medical and Physical Journal*," we find the following account of an hermaphrodite lamb, with an engraving of the parts, communicated by Mr. THOMAS, a surgeon in London. It seems very complete in its kind, and different in most respects from the cases published by Mr. Hunter, in his work on certain parts of the animal economy.

"Deviations," says he, "from the natural structure in animals do not frequently lead to any immediate improvements in the practice of medicine; but they tend to enlarge our knowledge of the animal economy, and may, in this way, be said to contribute remotely to the advancement of the healing art.

"The smaller deviations from the natural structure in man, and in other animals, are very numerous; but even those in the most important organs not unfrequently occur. That species of deviation or monstrosity, called *hermaphrodite*, has hardly ever been known to happen in the human species; but, in some other animals, as in the bull and the ram, it has been occasionally remarked."

"The lamb, the subject of the following description, was not more than two months old; it had the external characters of the ram, as far as is common at that age, except a deficiency of the scrotum: having been purchased amongst a number of others in a public market, no ac-

count of it, previous to dissection, could be procured. Upon opening the abdomen, the uterus appeared to occupy its usual position with respect to the urinary bladder and the rectum; the peritonæum was reflected over it in the usual manner, forming its ligaments; the blood-vessels (which were afterwards filled with a coloured fluid) took the common route, and the uterus divided into two horns, which, externally, had the usual appearance. The Fallopian tubes arose out of them, and terminated in a tortuous convoluted manner upon the body of a substance exactly resembling the testicle of a ram. The body of the uterus possessed the common rugose structure, but the horns were only lined by a smooth membrane, those glandular bodies which are observable in the perfect uterus being altogether wanting. At the anterior extremity of the fundus uteri, a thick semi-lunar valve passed across, which seemed to correspond to the os tincæ, and hardly allowed a fine probe to pass over its upper edge. The vagina scarcely existed, forming only a short pouch beyond the valve, which was lined by a smooth membrane, without any appearance of a follicular structure.

"The testes occupied the place of the ovaria, and were inclosed by the same reflection of the peritonæum which formed the broad ligaments of the uterus; they were of the common size, and in form a little more globous than usual, which, perhaps, may be explained from their never having been pendulous. The blood-vessels, after being filled with the red injection, appeared to take the usual circuitous route, communicating with those of the uterus; and the lymphatics also seemed to arise, and pass out by the spermatic chord in the usual order. A longitudinal section being made through one of the testicles, its internal structure was precisely the same with what is natural to that organ; and, upon maceration in water for a certain time, it put on the usual shaggy appearance formed by the tubuli semeniferi. The cremaster muscle was wanting, as well as the tunica vaginalis; the latter could not be obtained unless the testicle had passed the abdominal ring. The epididymis belonging to each testicle presented the common convoluted structure, and the canal was pervious throughout its whole length, quicksilver freely passing along it from the vas deferens to the testicle. The vasa deferentia, after leaving the epididymis, passed down upon the outside of the horns of the uterus, between the duplication of the peritonæum, and opened on each side of the caput gallinaginis; the vesiculæ feminales lay upon



the short pouch corresponding to the vagina, still preserving their relative situation with respect to the urethra; they were of the common size and structure, and their ducts opened into the urethra, along with the vasa deferentia, at the usual place. The internal surface of the urethra was studded with follicles, as is usually the case; the penis too, and the parts immediately connected with it, appeared every way complete and perfect. The urinary bladder was connected to the uterus by cellular membrane and its peritoneal covering; it had no connection with the vaginal pouch, but was joined to the penis in the common way.

"It has been an opinion received amongst many physiologists, that, when an animal of a perfect order [vide Hunter's Obs. p. 18.] is brought forth an hermaphrodite, it must have been the consequence of a double impregnation, and that such a production will be incapable of propagating its species.

"With respect to the birth of the animal above described, no information could be procured, nor can we be more certain with regard to its fecundating powers; but if we may be allowed to form some judgment from the exact resemblance of its male organs (in every essential particular) to those of a perfect ram at the same age, then there does not seem to be any reason, from the structure of the parts, why the animal, if it had grown up, should not have the natural propensities of the ram. When the testicles are detained in the abdomen, Mr. Hunter considered them as being always imperfect [at least in the instances of the *bull* and the *ram*]: but, in all those cases which came under his observation, both the size and structure of the testes were evidently defective. In the present case, no deficiency in the size or deviation from the natural structure was apparent, and their close connection with the Fallopian tubes, by the reflection of the peritonæum, will sufficiently explain the reason why they did not descend into the scrotum. The early death of this animal is to be regretted; for, had it arrived at maturity, it might have taught us whether such a species of monstrosity can ever shew any sexual partiality, and how far it could have been able to propagate its species. The probability is, that the presence of the uterus, imperfect as it is, would so far have checked or interfered with the natural propensities of the male, that the animal would have shewn little or no partiality for either sex."

The following is Mr. Thomas's explanation of the drawing of the parts exhibited in Second Plate XV.

- Fig. 1.* *aa* The testes.  
*bb* The spermatic vessels, injected.  
*cc* The epididymis, filled with quicksilver from the vas deferens.  
*dd* The uterus.  
*ee* The horns of the uterus.  
*ff* The Fallopian tubes, terminating in a convoluted manner, and opening upon the testicle on each side.  
*gggg* The vasa deferentia, arising out of the epididymis, and passing upon the outside of the horns of the uterus.  
*hh* The vesiculæ feminales, of the usual size, their ducts entering the caput gallinaginis along with the vasa deferentia.  
*i* The vagina, terminating in a cul de sac.  
*k* The urinary bladder.  
*l* The membranous part of the urethra, encircled by a sphincter muscle.  
*m* One of Cowper's glands.  
*n* The bulb of the urethra.  
*o* The right crus of the penis, separated from the pubis.  
*p* The penis.  
*q* The glans, with a bristle introduced into the urethra.

*Fig. 2.* The vagina and uterus laid open, shewing the internal rugose appearance usually met with in the perfect uterus.

- a* A broad semi-lunar valve, somewhat corresponding to the os tincæ.  
*bb* The horns of the uterus, lined by a smooth membrane, wanting the glandular bodies constantly found in the perfect uterus.

*Fig. 3.* The membranous part of the urethra laid open into the bladder, shewing bristles introduced into the oculi gallinaginis, also two other bristles in the ureters.

**HERMAPHRODITE FLOWERS**, in botany, are those which contain both antheræ and stigma, which are the male and female parts of generation.

**HERNIA**, a rupture. In consequence of some sudden effort, part of the abdominal contents are forced through the interstices left between the tendinous expansions of the abdominal muscles for the passage of nerves and blood-vessels, or of some other part, and a tumour is formed, which, from its resemblance to the pushing forth of a branch, has been called a *hernia*. Dr. Cullen places this genus of disease in the class *Locales*, and order *Etiopie*. According to the situations of the tumours and their contents, they receive their respective denominations, e. g. when the guts descend through

the groin, it is called, from its seat, a *bubonocoele*; but from the contents of the tumour, an *enterocoele*, &c. See RUPTURE.

**HERNIA CONGENITA**, is when there is a rupture of the intestines into the scrotum, and the intestines and testicles are found in contact.

**HERNIA CYSTICA**, a hernia of the urinary bladder.

**HERNIA INCARCERATA**. An incarcerated, imprisoned, or confined hernia, is either when the protruded intestine so adheres that it cannot be returned; or when it cannot be returned because of the faeces, or other matter, which is descended into it, not being capable of a return.

**HERNIA UMBILICALIS**, is when the omentum, or intestine, or both, protrude at the navel.

**HERNIA VENTRALIS**. This may happen in almost any part of the fore-part of the belly, but is most frequently found between the recti muscles, either above or below the navel.

**HERNIA VESICALIS**, *i. e.* **HERNIA CYSTICA**.

**HERPES**, or **ERPE** (from *ερπω*, to spread, or creep), such superficial sores or eruptions on the skin as either extend themselves in all directions, or heal on one side whilst the opposite side advances. Dr Cullen places this genus of disease in the class *Locules*, and order *Dialyses*; and defines it *phlyctenæ*, or a great number of small ulcers crowding together, creeping, and difficult to heal: it belongs also to the *impetigines*.

Whether these ulcers affecting the human skin are to be considered as liable to attack brutes, the state of veterinary knowledge does not afford us any satisfactory means of ascertaining. The diseases of the latter, in general, are extremely simple, and those of the skin so little formidable as scarcely to have required a scientific discrimination; nevertheless, as analogy must be followed in all cases where we have no better guide, it may be worth while to give a short account of the varieties of herpes enumerated by the latest surgical writers.

Mr. Bell, in his Treatise on Ulcers, observes, that this cutaneous affection may, in all its varieties, be included in the four following, viz. 1. The *herpes farinosus*; which includes what some call the dry tetter. 2. *Herpes pustulosus*; which includes the crusta lactea, and the tinea capitis. 3. *Herpes miliaris*; called also formica miliaris, cencarius: of this variety is the ulcerous eruption called the ring-worm. 4. *Herpes*

*exedens*; this includes the ulcers called depascent and phagedenic.

The *herpes farinosus* is the most simple kind. It appears on any part of the body, most frequently on the face, neck, arms, or wrists; it comes out in broadish spots, which consist of very small red pimples, which are attended with a troublesome itching; they soon fall off in the form of a white powder, which resembles fine bran; they leave the skin perfectly sound, but are apt to return in the form of a red efflorescence, fall off, and renew as before.

The *herpes pustulosus* occurs most frequently in children, generally attacks the face, and behind the ears; often on other parts of the head also, but rarely elsewhere. It appears in the form of pustules, which are originally separated and distinct, but afterwards run together in clusters. At first they seem to contain nothing but a thin watery serum, which afterwards turns yellow, and exuding over the whole surface of the part affected, at last dries into a thick crust or scab: when this falls off, the skin below frequently appears entire, with only a slight degree of redness on its surface; but, on some occasions, when the matter has probably been more acrid, upon the scab falling off, the skin is found slightly excoriated.

The *herpes miliaris* generally appears in clusters, though sometimes in distinct circles of very minute pimples. These are at first perfectly separate, and contain only a clear lymph, which, in the course of the disease, is excreted upon the surface, and there forms into small distinct scales; these at last fall off, and leave a considerable degree of inflammation below, that still continues to exude fresh matter, which likewise forms into cakes, and so falls off. The itching in this sort of ulcer is always very troublesome, and the matter discharged from the pimples is so tough and viscid, that every thing applied to the part adheres so as to occasion much trouble and uneasiness to the patient on its being removed. The whole body is subject to this disorder, but it most frequently appears on the breast, perinæum, scrotum, and loins.

The *herpes exedens* discovers itself on any part of the body, but mostly about the loins, where it sometimes spreads to such a degree as to extend quite round the waist. At first it usually appears in the form of several small ulcerations, collected into larger spots of different sizes and various figures, with always more or less of an erysipelatous-like inflammation. These ulcerations discharge large quantities of a thin, sharp,



ferous matter, which sometimes forms into small crusts, that in a short time fall off; but most frequently the discharge is so thin and acrid as to spread along the neighbouring parts, and there to produce the same kind of sores. Though these excoriations or ulcers do not in general proceed further than the true skin, yet sometimes the discharge is so very penetrating and corrosive as to destroy the skin, the cellular membrane, and, on some occasions, the muscles themselves.

The universal name given to the herpes in brutes is that of the *mange*; nor has it been thought worth while to ascertain whether the disease is the same in different animals, or similar in different instances. An indiscriminate treatment of this malady has been the natural consequence (see the article *MANGE*), and frequently with that indifferent success to be expected when the application of medical remedies is unaccompanied by any knowledge of the diseases so treated.

**HIBERNICUS LAPIS**, *Irish slate*, a kind of slate which is found in Ireland, &c. of a blueish black colour. It is an argillaceous earth, impregnated with alum and iron, in a very small quantity. It seems to be much of the nature of boles. To its aluminous contents it owes its astringency.

**HIDE**, the skin of a large quadruped, with its covering of hair. See *CUTIS*.

**HIDE-BOUND**. A horse is said to be hide-bound when his skin sticks so close to his ribs that it seems immovable; but this is not to be accounted an original disease, but only a symptom, which may either be caused by want of sufficient food, or from harassing horses beyond their strength, without allowing them sufficient time for rest and necessary refreshment. Sometimes horses grow hide-bound very suddenly, from fevers and convulsive disorders; and, if that symptom is not suddenly removed, the disorders that occasion it generally prove mortal; but nothing is more common than to see surfeited horses also hide-bound; and therefore, in the cure of all hide-bound horses, regard must be had to the original cause from whence it proceeds.

The diet of hide-bound horses should be cool and opening, as scalded bran or barley; and Gibson recommends, that an ounce of fennugreek seeds should be given in his feeds for a month, or longer. As this often proceeds from worms, it may be necessary to give the medicines common in those cases. See the article *WORMS*.

**HIERA PICRA**, the *holy bitter*, now called *compound powder of aloes*. It was formerly called *hiera logadii*. It is a particular composition of aloes and spices, and so called from the supposed excellency of its virtues; the words *ἁγία*, *sancta*, and *πικρά*, *amara*, signifying the holy bitter. The term *hiera* has also, for the same reason, been given to a variety of other compositions, by Logadius, Ruffus, Archigenes, and others, at large described by Æginetus, lib. vii. cap. 8. but they are all discontinued.

**HIN**, *i. e.* *asafœtida*. See *ASAFŒTIDA*.

**HIP**, or *HAUNCH*. See the article *HAUNCH*.

**HIP-SHOT**, a supposed disorder of a horse, when he has wrung or sprained his haunches or hips, so as to relax the ligaments that keep the bone in its due place (see *SPRAIN*). The signs are, that the horse will halt much, and go side-long, trailing his leg after him; and the hip which is hurt will be lower than the other, and the flesh will fall away on the side of his buttock. Some, for this, put a rowel about three or four inches below the large cavity which receives the head of the thigh-bone. If the hip be out of joint, however, as the term *hip-shot* seems to indicate, neither this nor any local remedy can avail.

**HIPPECACUANNA**, *i. e.* *IPECACUANHA*. See the latter.

**HOCK**. See the articles *BONES* and *HOUGH*. The hock is a part liable to hurts and strains; but we meet with many of them that are easily cured when taken in time, though they have been very much swelled, only with the use of cooling remedies; but, when the ligaments are hurt, the cure becomes difficult. The surest way in this case, says Gibson, where there is great pain and weakness, is to ply the part well with fomentations. If the callosity or hardness grows only on the outside, it may be effectually removed by repeated blistering, and without any hazard; but if it is upon the inside, it may be out of the reach of outward applications: the best remedy in this case is firing the part very gently with small razors or lines, and pretty close together; after which apply the following charge:

Take of Mercurial plaster, four ounces;  
Hemlock plaster, with ammoniac,  
two ounces.

Let these be melted together, and applied over the hock, renewing it once or twice, as it crumbles off.

Sometimes the disorders of the hocks pro-

duce the fallenders. See the article **SALLEN-DERS**.

**HOLD**, as a mare holds after being covered by the horse. See the article **RETAIN**.

**HONEY**, a well-known substance obtained from the labours of the bee. As a medicine, its effects are trifling, especially in the diseases of brutes; it is therefore seldom used but as a medium for the conveyance of other remedies, as in making balls of a proper consistence. Gibson, however, commends it as an application to ulcers.

**HOOF OF A HORSE**, or **CRUST**, the horny part which covers the foot, and defends the soft and moveable parts which compose it. See the article **FOOT**.

**HOOF-BONY**, an obsolete term used by farriers. A horse was said to be *hoof-bony* that had a round bony swelling growing on the coronet.

**HOOF-BOUND**. We say a horse is hoof-bound when the hoof is so tight round the inset that it turns the foot somewhat into the shape of a bell. This may be occasioned by an excessive hardness and thickness of the crust; but it is more frequently caused by bad shoeing, especially in the attempts of farriers to widen the heel. Sometimes cutting the toes down too much will give that shape to the foot, and cause a horse to go lame; but this is easily discovered both by the eye and by the horse setting his foot down tenderly. Gibson says, he has known horses that have had so much of the toes cut down, that they could not go till all the nails were pulled out before. According to that writer, the only way to relieve the binding of the hoof is "to draw the foot down from the coronet almost to the toe with a drawing-knife, making seven or eight lines or razes through the hoof, almost to the quick; afterwards keep it charged with pitch or rosin, till the lines are worn out in shoeing, which will require several months." Most people, for this reason, turn such horses to graze till the feet grow down. See the article **FOOT**.

**HOOF-CASTING**, a complete separation of a horse's hoof. This may be occasioned by whatever accident may bring an imposthumation in the foot, by which the whole hoof becomes loosened, and falls off from the bone. If the coffin-bone remains uninjured, a new hoof may be procured by the following method: apply to the part any mild ointment or dressing spread upon tow; then make a boot of leather, with a strong sole, to be laced fast about the pastern, bolstering and stopping the foot with soft flax, that the tread may be easy; renewing the dress-

ing every day until the new hoof grow. Some dress the fore with the fine powder of myrrh, in order to prevent a fungus; sometimes burnt alum or precipitate is added to it, and the luxuriant flesh daily washed with lime-water. The old hoof should by no means be pulled off, unless circumstances happen that require its removal; for it serves as a defence to the new one, and makes it grow more smooth and even; and, indeed, nature will effect this at her own proper time. See **FOUNDER**.

**HOOSE**, a kind of chronic affection of the lungs to which cows are subject. See **CATTLE**.

**HORDEOLUM**, a tubercle on the eye-lid, resembling a barley-corn in shape: it is also called *cribbe*. In the human subject, it is small, red, hard, and immovable. It is an encysted tumour, and contains a thick matter. Its seat is either on the inside or the outside of the eye-lid.

**HOREHOUND**, the *marrubium album vulgare*, Linn. a herb of a very strong, not disagreeable, smell, and a roughish bitter taste. In the human subject, it has been thought useful as a remedy in chronic affections of the lungs; and, with the same view, it has been administered to horses, though we cannot but consider it a very feeble medicine in either case.

**HORN**. See the articles **HOOF** and **FOOT**. To *give a stroke with the horn* is an operation described by Guillet, and consists in an attempt to bleed a horse in the roof of the mouth with the *horn* of a stag or roe-buck, the tip or end of which is so sharp and pointed as to perform the office of a lancet. We are directed to *strike with the horn* in the middle of the fourth notch or ridge of the upper jaw.

**HORN-HIPPED**. See **CROUP**.

**HORNED CATTLE**. See **CATTLE**.

**HORSE**, in zoology, the species *Cavallus* of a genus of quadrupeds belonging to the order of *Bellua*. This genus comprehends the horse, the ass, the mule, the zebra, and an animal not familiarly known, called the quagga, a species found among the Hottentots. We shall, of course, confine ourselves to the natural history of the first of these; having noticed the ass and the mule, the only animals of the horse kind made use of in Britain, under their respective heads.

The horse has a long flowing mane, and the tail covered on all parts with long hairs.—This animal, even in a domestic state, is bold and fiery: equally intrepid as his master, he faces danger and death with ardour and magnanimity. He delights in the noise and tumult of arms, and seems to feel the glory of victory: he ex-



ults in the chace; and his eyes sparkle with emulation in the course. But though bold and intrepid, he is docile and tractable: he knows how to govern and check the natural vivacity and fire of his temper. He not only yields to the hand, but seems to consult the inclination of his rider. Constantly obedient to the impression he receives, his motions are entirely regulated by the will of his master. He in some measure resigns his very existence to the pleasure of man. He delivers up his whole powers; he reserves nothing; he will rather die than disobey. Who could endure to see a character so noble abused! who could be guilty of such gross cruelty! Yet this character, though natural to the animal, is in some measure the effect of education, which commences with the loss of liberty, and is finished by constraint. The slavery of the horse is so ancient and so universal, that he is but rarely seen in a natural state. Several ancient writers talk of wild horses, and even mention the places where they were to be found; but as Europe is almost equally inhabited, these are not now to be met with. The horses running wild in America were originally transported from Europe by the Spaniards; for this species of animals did not exist in the new world. In those vast deserts they roamed at large without any restraint. M. de Salle relates, that he saw, in the year 1685, horses feeding in the meadows of North America, near the bay of St. Louis, which were so ferocious that nobody durst come near them. Oexmelin says, that he has seen large troops of them in St. Domingo running in the valleys; that when any person approached, they all stopped; and one of them would advance till within a certain distance, then snort with his nose, take to his heels, and the whole troop after him. Every author who takes notice of these horses of America agrees, that they are smaller and less handsome than those of Europe. These relations sufficiently prove, that the horse, when at full liberty, though not a fierce or dangerous animal, has no inclination to associate with mankind; that all the softness and ductility of his temper proceeds entirely from the culture and polish he receives in his domestic education, which in some measure commences as soon as he is brought forth.

The motions of the horse are chiefly regulated by the bit and the spur; the bit informs him how to direct his course, and the spur quickens his pace. The mouth of the horse is endowed with an amazing sensibility; the slightest motion or pressure of the bit gives him warning, and instantly determines his course.

The horse has not only a grandeur in his ge-

neral appearance, but there is the greatest symmetry and proportion in the different parts of his body. The regularity and proportion of the different parts of the head give him an air of lightness, which is well supported by the strength and beauty of his chest. He erects his head, as if willing to exalt himself above the condition of other quadrupeds: his eyes are open and lively; his ears are handsome, and of a proper height; his mane adorns his neck, and gives him the appearance of strength and boldness.

At the age of two years, or two years and a half, the horse is in a condition to propagate; and the mare, like most other females, is ready to receive him still sooner. But the foals produced by such early embraces are generally ill-made and weakly. The horse should never be admitted to the mare till he is four or four and a half; this is only meant with regard to draught horses. Fine horses should not be admitted to the mare before they be six years old; and Spanish stallions not till seven. The mares are generally in season from the beginning of April to the end of June; but their chief ardour for the horse lasts but about fifteen or twenty days, and this critical season should always be embraced. The stallion ought to be sound, well-made, vigorous, and of a good breed. For fine saddle-horses, foreign stallions, as Arabians, Turks, Barbs, and Andalusians, are preferable to all others. Next to these British stallions are the best; because they originally sprang from those above mentioned, and are very little degenerated. The stallions of Italy, and especially the Neapolitans, are very good. The best stallions for draught or carriage horses are those of Naples, Denmark, Holstein, and Friesland. The stallions for saddle-horses should be from fourteen to fifteen hands high, and for draught-horses at least fifteen hands. Neither ought the colour of stallions to be overlooked; as a fine black, grey, bay, sorrel, &c. Besides these external qualities, a stallion ought to have courage, tractability, spirit, agility, a sensible mouth, sure limbs, &c. These precautions in the choice of a stallion are the more necessary, because he has been found by experience to communicate to his offspring almost all his good or bad qualities, whether natural or acquired.

The mare contributes less to the beauty of her offspring than the stallion; but she contributes perhaps more to their constitution and stature: for these reasons, it is necessary that the mares for breed be perfectly sound, and make good nurses. For elegant horses, the Spanish and Italian mares are best; but for draught-horses, those of Britain and Normandy are pre-

ferable. However, when the stallions are good, the mares of any country will produce fine horses, provided they be well made and of a good breed.

Mares go with young eleven months and some days. They bring forth standing; contrary to the course of most other quadrupeds, who lie during this operation. They continue to bring forth till the age of sixteen or eighteen years; and both horses and mares live between twenty-five and thirty years. Horses cast their hair once a-year, generally in the spring, but sometimes in the autumn. At this time they are weak, and require to be better fed and taken care of than at any other season.

In Persia, Arabia, and most eastern countries, they never geld their horses, as is done in Europe and China. This operation greatly diminishes their strength, courage, and spirit; but it makes them good-humoured, gentle, and tractable. With regard to the time of performing this operation, the practice of different countries is different: some geld their horses when a year old, and others at 18 months. But the best and most general practice is to delay the operation till they be two years old at least; because, when the gelding is delayed for two years or more, the animals retain more of the strength and other qualities which naturally belong to the male.

As the utility of horses surpasses that of all other domestic animals, it may be of use to subjoin some marks by which the age and other properties of horses may be distinguished.

In old horses, the eye-pits are generally deep; but this is only an equivocal mark, being also found in young horses begot by old stallions. The most certain knowledge of the age is to be obtained from the teeth. Of these a horse has 40; 24 grinders or double teeth, 4 tushes, and 12 fore-teeth: mares have no tushes, or at least very short ones. It is not from the grinders that we know the age; it is discovered first by the fore-teeth, and afterwards by the tushes; but on this subject we have already treated fully under the article AGE.

At ten years old, the upper teeth seem blunted, worn out, and long, the gum contracting itself as its years increase; the barer therefore they are, the older is the horse. From ten to thirteen or fourteen years, little can be seen to indicate the age; but at that time some hairs of the eye-brows begin to turn grey. This mark, however, is equivocal, like that drawn from the depth of the eye-pits; horses from old stallions or mares, having grey hairs in the eye-brows when they are not above nine or ten years old. In some horses the teeth are of such a hardness

as not to wear; and in such the black mark always subsists, being never effaced by time; but the age of these horses, which are called *beguts* by the French, is easily known; the hollow of the tooth being filled up, and at the same time the tushes very long. It has been further observed, that this is more common in mares than in horses. The age of a horse may be also known, though less accurately, by the bars in his mouth, which wear away as he advances in years.

When the horse is without blemish, the legs and thighs are clean, the knees straight, the skin and shank thin, and the back-sinew strong and well-braced. The sinews and the bones should be so distinct, as to make the legs appear thin and lathy, not full and round. The pastern joints should never be large and round; nor must there be any swelling near the coronet. The hocks should be lean and dry, not puffed up with fat. With regard to the hoof, the coronet should be equally thick, and the horn shining and greyish. A white horn is a sign of a bad foot, for it will wear out in a short time; and likewise when the horn is thin, it is liable to be spoiled in shoeing, and by travelling hard on stony grounds. This is best known when the shoe is taken off; for then the verge all round the sole will appear thin, and the horse will winch at the least touch of the pincers.

A strong foot has the fibres of the hoof very distinct, running in a direct line from the coronet to the toe, like the grain of wood. In this case, care must be taken to keep the foot moist and pliable. The greatest inconvenience attending a hard strong foot is its being subject to rifts and fissures, which cleave the hoof quite through sometimes from the coronet down to the bottom. See SAND-CRACK.

A narrow heel is likewise a defect; and when it is not above two fingers in breadth, the foot is bad. A high heel causes a horse to trip and stumble often; and a low one, with long yielding pasterns, is very apt to be worn quite away on a journey. Too large a foot in proportion to the rest of the body renders a horse weak and heavy.

The head of a horse should be small, and rather lean than fleshy. The ears should be small, erect, thin, sprightly, and pointed. The forehead, or brow, should be neither too broad nor too flat, and should have a star or snip upon it. The nose should rise a little, and the nostrils should be wide, that he may breathe more freely. The muzzle should be small, and the mouth neither too deep nor too shallow. The jaws should be thin, and not approach too near together at the throat, or too high upwards to-



wards the onset, that the horse may have sufficient room to carry his head in an easy graceful posture. The eyes should be of a middle size, bright, lively, and full of fire. The tongue should be small, that it may not be too much pressed by the bit; and it is a good sign when his mouth is full of white froth, for it shews a wholesome moisture.

The neck should be arched towards the middle, growing smaller by degrees from the breast and shoulders to the head. The hair of the mane should be long, small, and fine; and if it be a little frizzled, so much the better. The shoulders should be pretty long; the withers thin, and enlarged gradually from thence downwards; but so as to render his breast neither too narrow nor too gross. A thick-shouldered horse soon tires, and trips and stumbles every minute; especially if he has a thick large neck at the same time. When the breast is so narrow that the fore thighs almost touch, they are never good for much. A horse of a middle size should have the distance of five or six inches between his fore thighs, and there should be less distance between his feet and his thighs near the shoulders when he stands upright.

The body or carcase of a horse should be of a middling size in proportion to his bulk, and the back should sink a little below the withers; but the other parts should be straight, and no higher behind than before. He should also be home-ribbed; but the short ribs should not approach too near the haunches, and then he will have room to fetch his breath. When a horse's back is short in proportion to his bulk, and yet otherwise well limbed, he will hold out a journey, though he will travel slow. When he is tall, at the same time with very long legs, he is of little value.

The wind should never be overlooked in the view of a horse: and it may be easily known by his flanks, if he is broken-winded, when he stands quiet in the stable; because he always pinches them in with a very slow motion, and drops them suddenly. A thick-winded horse fetches his breath often, and sometimes rattles and wheezes. This may be always discovered when he is put to brisk exercises.

The temper of a horse should always be observed; a vicious horse generally lays his ears close to his pole, shews the whites of his eyes, and looks sullen and dogged. An angry horse may be known by his frowning looks; and he generally seems to stand in a posture of defence. When he is very vicious, he pays no regard to the groom that feeds him: however, some horses that are ticklish will lay back their ears, and yet

be of a very good disposition. A fearful horse is apt to start, and never leaves it off till he is old and useless. A fretful horse is very unfit for a journey; and you may discover his temper as soon as he gets out of the stable. A dull, heavy, sluggish horse may be easily known, whatever tricks are used to rouse his spirits.

With regard to the colour of a horse, there are different opinions; the bright and all other bays are accounted good. The chestnut horse is generally preferred to the sorrel, unless the former happens to be bald, or partly-coloured, with white legs. Brown horses have generally black manes and tails, and their joints are of a rusty black. Those of this colour that are dappled are much handsomer than the rest. Horses of a shining black, and well-marked, without too much white, are in high esteem for their beauty. A star, or blaze, or white muzzle, or one or more feet tipped with white, are thought to be rather better than those that are quite black.

Of greys, the dappled are accounted best; though the silver grey make a more beautiful appearance, and often prove good. The iron grey with white manes and tails are thought not to be so hardy. Greys of every kind will turn white sooner or later; but the nutmeg grey, when the dappled parts incline to bay or chestnut, are said to be good hardy horses. Roan horses have a diversity of colours mixed together; but the white is more predominant than the rest. They are all generally hardy, and fit for the road; and some are exceedingly good. Those of a strawberry colour most resemble the sorrel, and they are often marked with white on the face and legs. When the bay is blended with it, he seems to be tinged with claret; and some of these prove to be very good. Dun, fallow, and cream-coloured horses have a list down their backs; and their manes and tails are black. Dun horses are seldom chosen by gentlemen, but yet they may be very useful to the country farmer. The fallow and cream-coloured are more esteemed, both for beauty and use. Those horses that are finely spotted with gay colours like leopards are a great rarity, and for that reason are only in the hands of opulent men.

There is some difference in horses, according to the different countries where they are bred. For instance, in France, those of Bretagne are made pretty strong, and have generally black hair, or brown bay; and they have good legs and feet, with hardy mouths, and head rather short and fleshy; but in general they are clumsy. The horses of Franche Comte are said to

have the legs of tigers, and the belly of a hind; but they are short and thick, and of a middle size; being much more proper for drawing than riding. The horses of Gascony are not unlike those of Spain; but they are not so handsome, nor so active, and therefore they are more proper to draw carriages. The Limosin horses are very vicious, and are good for little till they are six years old. Their colour is generally bay, or a bay brown. The horses of Normandy are much like those of Bretagne; and those of Poitou have good bodies, legs, feet, and eyes; but they are far from being handsome.

The horses of Germany are much better and more handsome than those of the Low-countries. They are of great use for carriages; but much more for the army, and for drawing the artillery. They have a great deal of hair, especially about the legs. They are not large, but they are well set; and yet they have tender feet. The Hungarian horses are excellent for the coach, as well as for riding: but they are large, though well proportioned; and they are of all colours, and in general very swift.

The Danish horses are low, short, and square; but they have fine heads, and short hair. The horses of the Low-countries are very fit for the coach, and they are best known by the name of Flanders-mares. The Polish horses are like the Danish; only they have not so fine a fore-hand: their colour is generally a bright bay, and that of the outward peel of an onion; and they are fiery and vicious. The horses of Switzerland are pretty much like those of Germany; which is no wonder, since the Germans purchase a great number of them. The horses of Piedmont are fiery, of a middle size, and of all sorts of colours; their legs are good and handsome, their eyes fine, their ears small, and their mouths good; but they do not carry their heads well.

The horses of Naples and Italy are generally ill-made, and lean; and yet they are good and useful, for they are light and proper for racing, though not for a long course: they never do well in a colder climate. The Spanish horses are very well made, and handsome, as well as very active and nimble; they have good eyes, handsome legs and heads, and are easily managed; they are also good for racing, if they are well kept; however, they are not so good in northern climates as in their own country. The Turkish horses are of different shapes; but they are generally swift, though their mouths are bad. Most of them are white; though there

are other colours; and they are large, hardy, strong, and fit for the road.

The horses of Barbary, commonly called *barbs*, have strong hoofs, and are more proper for racing than any others whatever: some have said they never grow old, because they preserve their vigour to the last. They are excellent stallions; and some of them are used as such in Britain: however, the Arabian horses are not quite so good as the Barbary, though some think they are both of the same kind; only those that are used to the deserts of Arabia are always in action. The horses of the Gold-Coast of Guinea are very few in number, and in other parts of that coast there are none at all; for many of the negroes, when they have been first brought over to our American plantations, have expressed great admiration at the sight of a horse, and even been afraid to come near one.

The horses of the Cape of Good Hope were originally brought from Persia. Mr. Pennant, in his British Zoology, describes them to be generally small, and of a chestnut colour; for those that are natives of that country are all wild, and could never yet be tamed. The horses of China are good, and more particularly in the province of Yun Nan; for they are very vigorous, though a little low. The horses of the Eluth Tartars are good and full of fire, and their size is much the same as the Polish horses: they are afraid of nothing, not even of lions and tigers; but perhaps this may be owing to use. In the country of the Mogul they are very numerous, and of all colours: they are generally of the middle size, though there are some as large and as handsome as those in Europe. The wild horses of Tartary differ very little from the tame; but they are so swift, that they avoid the arrows of the most skilful hunters.

The breed of horses in Great Britain is as mixed as that of its inhabitants: the frequent introduction of foreign horses has given us a variety, that no single country can boast of: most other countries produce only one kind; while ours, by a judicious mixture of the several species, by the happy difference of our soils, and by our superior skill in management, may triumph over the rest of Europe, in having brought each quality of this noble animal to the highest perfection.

In the annals of Newmarket may be found instances of horses that have literally outstripped the wind, as the celebrated M. Condamine has lately shewn in his remarks on those of Great Britain. Childers is an amazing instance of ra-



pidity; his speed having been more than once exerted equal to eighty-two feet and a half in a second, or near a mile in a minute: the same horse has also run the round course at Newmarket (which is about four hundred yards less than four miles) in six minutes and forty seconds; in which case his fleetness is to that of the swiftest barb as four to three; the former, according to Dr. Maty's computation, covering at every bound a space of ground equal in length to twenty-three feet royal, the latter only that of eighteen feet and a half royal. A more recent instance of extraordinary speed in the horse, accompanied with unusual circumstances, has occurred in Mr. Kelly's celebrated horse Eclipse: some account of this wonderful animal will be found under the article ECLIPSE.

Horses of this kind derive their origin from Arabia, the seat of the purest and most generous breed.

The species used in hunting is a happy combination of the former with others superior in strength, but inferior in point of speed and lineage: an union of both is necessary; for the fatigues of the chace must be supported by the spirit of the one, as well as by the vigour of the other.

No country can bring a parallel to the strength and size of our horses destined for the draught, or to the activity and strength united of those that form our cavalry.

In our capital there are instances of single horses that are able to draw on a plain, for a small space, the weight of three tons; but could with ease, and for a continuance, draw half that weight. The pack horses of Yorkshire, employed in conveying the manufactures of that county to the most remote parts of the kingdom, usually carry a burden of 420 pounds; and that indifferently over the highest hills of the north, as well as the most level roads. But the most remarkable proof of the strength of our British horses is to be drawn from that of our mill-horses: some of these will carry at one load thirteen measures, which, at a moderate computation of 70lb. each, will amount to nine hundred and ten; a weight superior to that which the lesser sort of camels will bear: this will appear less surprising, as these horses are by degrees accustomed to the weight; and the distance they travel no greater than to and from the adjacent hamlets.

Our cavalry, on many occasions, when they had opportunity, shewed, over the French and Germans, a great superiority both of strength and

activity. The enemy was broken through by the impetuous charge of our squadrons; while the German horses, from their great weight and inactive make, were unable to second our efforts; though the troops were actuated by the noblest ardour.

The present cavalry of this island only supports its ancient glory. It was eminent in the earliest times: our scythed chariots, and the activity and good discipline of our horses, even struck terror into Caesar's legions; and the Britons, as soon as they became civilised enough to coin, took care to represent on their money the animal for which they were so celebrated. It is now impossible to trace out this species; for those which exist among the *indigenæ* of Great Britain, such as the little horses of Wales and Cornwall, the hobbies of Ireland, and the shelties of Scotland, though admirably well adapted to the uses of those countries, could never have been equal to the work of war: but probably we had even then a larger and stronger breed in the more fertile and luxuriant parts of the island. Those we employ for that purpose, or for the draught, are an offspring of the German or Flemish breed, meliorated by our soil and a judicious culture.

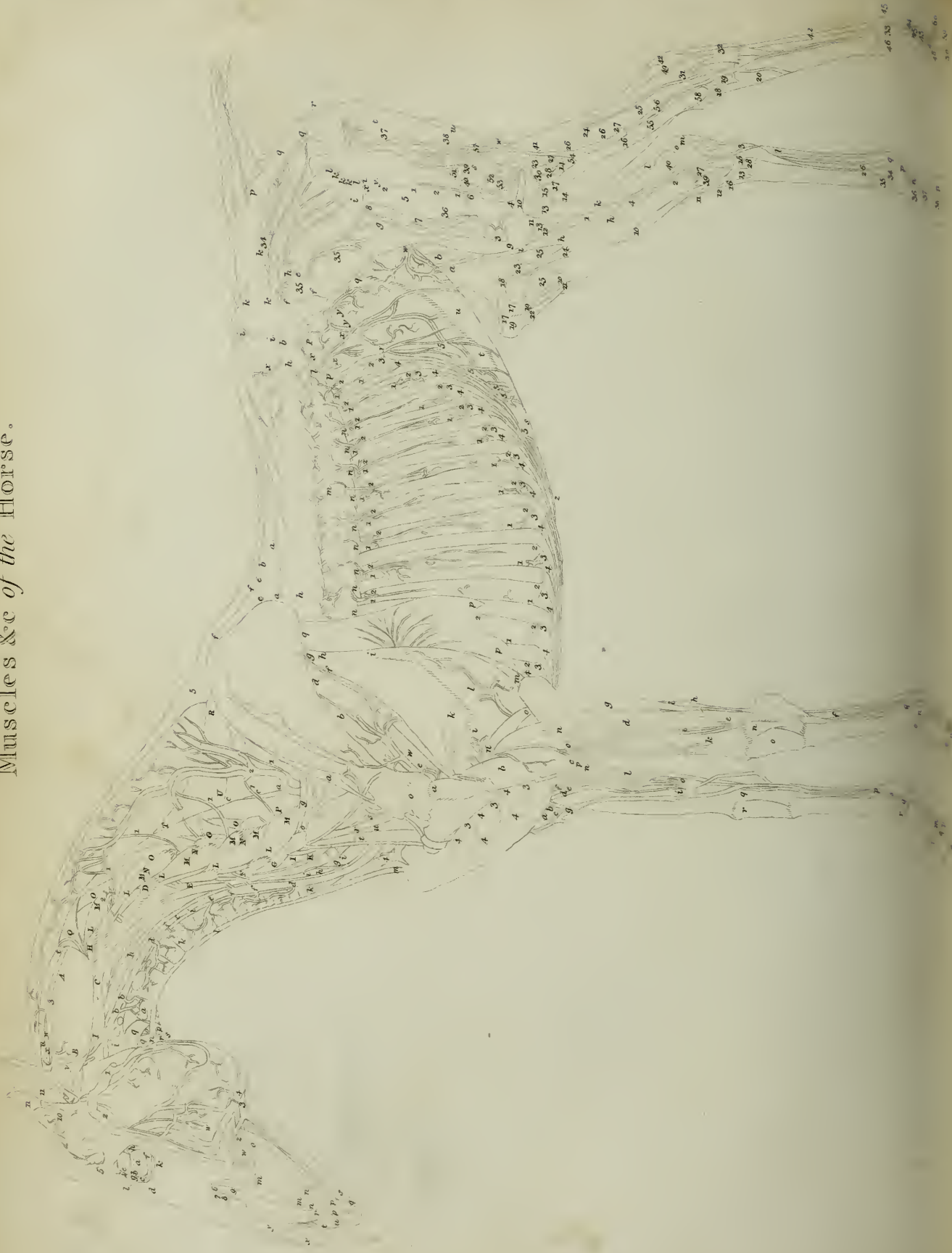
The English were ever attentive to an exact culture of these animals, and in very early times set a high value on their breed. The esteem that our horses were held in by foreigners, so long ago as the reign of Athelstan, may be collected from a law of that monarch, prohibiting their exportation, except they were designed as presents. These must have been the native kind, or the prohibition would have been needless; for our commerce was at that time too limited to receive improvement from any but the German kind, to which country their own breed could be of no value.

But when our intercourse with the other parts of Europe was enlarged, we soon laid hold of the advantages this gave of improving our breed. Roger de Belesme, earl of Shrewsbury, is the first that is on record: he introduced the Spanish stallions into his estate in Powisland, from which that part of Wales was for many ages celebrated for a swift and generous race of horses. Giraldus Cambrensis, who lived in the reign of Henry II. takes notice of it; and Michael Drayton, cotemporary with Shakspeare, sings their excellence in the sixth part of his Polyolbion. This kind was probably destined to mount our gallant nobility, or courteous knights for feats of chivalry, in the generous contests of the tilt-yard. From these sprung, to speak the language of the





Muscles &c of the Horse.







*Muscles &c of the Horse.*





times, the flower of courfers, whose elegant form added charms to the rider, and whose activity and managed dexterity gained him the palm in that field of gallantry and romantic honour.

The increase of our inhabitants, and the extent of our manufactures, together with the former neglect of internal navigation to convey those manufactures, multiplied the number of our horses: an excess of wealth, before unknown in these islands, increased the luxury of carriages, and added to the necessity of an extraordinary culture of these animals: their high reputation abroad has also made them a branch of commerce, and proved another cause of their vast increase.

As no kingdom can boast of parallel circumstances, so none can vie with us in the number of these noble quadrupeds. It would be extremely difficult to guess at the exact amount of them, or to form a periodical account of their increase: the number seems very fluctuating. William Fitz-Stephen relates, that in the reign of king Stephen, London alone poured out twenty thousand horsemen in the wars of those times: yet we find, that, in the beginning of queen Elizabeth's reign, the whole kingdom could not supply two thousand horses to form our cavalry; and even in the year 1588, when in the most imminent danger from the Spanish invasion, all the cavalry which the nation could then furnish amounted only to three thousand. To account for this difference we must imagine, that the number of horses which took the field in Stephen's reign was no more than an undisciplined rabble; the few that appeared under the banners of Elizabeth a corps well formed, and such as might be opposed to so formidable an enemy as was then expected: but such is their present increase, that, in the late war, the number employed was thirteen thousand five hundred and seventy-five; and such is our improvement in the breed of horses, that most of those which are used in our waggons and carriages of different kinds might be applied to the same purpose: of those, our capital alone employs near twenty-two thousand.

The technical description of the parts of a horse may be found under their appropriate heads, and by reference to the anatomical plates of the horse, particularly Plate VI. which exhibits a view of the exterior form of that animal.

For the breeding, rearing, &c. of horses, see the articles BREEDING, COLT, &c.—for the method of training and managing them, see HORSEMANSHIP, BREAKING, MANEGE, &c. Horses for the different purposes of the saddle were

in former days termed *nags*, *amblers*, *pacers*, *stirrers*, *trotting-horses*, *hobbies*, *great-horses*, or horses for the *buff-saddle* (for war), *hunting-horses*, *courfers*, *race-horses*.

The appellatives, whether synonymous or distinctive, in present equestrian use among us, are *road-horses*, *riding-horses*, *saddle-horses*, *nags*, *chaplains horses*, *hacks*, *hackneys*, *ladies horses* or *pads*, *hunters*, *running horses*, *racers*, *race-horses*, *gallopers*, *managed horses*, *chargers*, *troop-horses*, *post-hacks* or *post-horses*, *trotters*, *cantering-hacks* or *canterers*, horses which carry double, *galloways*, and *ponies*. Where necessary, we have noticed these under their several heads.

HORSE ANATOMY, that part of comparative anatomy which is appropriate to the horse. The subject has already been laid down in the articles ANATOMY, BONES, and EXTERIOR, and the series of views of the muscles of the horse will hereafter be continued in the article MUSCLES. As intermediate links of the chain, we present the reader with some additional plates, with their appropriate descriptions.

*Description of Plate X. which exhibits a fourth View of the Muscles, &c. of the Horse.*

*Muscular and other Parts in the Head.*

*a b* The globe or ball of the eye; *a* the pupil; *b* the white of the eye, or tunica sclerotica, covered with the albuginea or tendons of the straight muscles only, and not covered with the tunica adnata or conjunctiva.

*c* One of the lachrymal glands placed in the great canthus of the eye, called *caruncula lachrymalis* and *glandula lachrymalis inferior*.

*d* The semi-lunar fold, formed by the conjunctiva.

*e* Attollens.

*f* Deprimens.

*g* Adducens.

*h* Abducens.

*i* Obliquus superior.

*k* Obliquus inferior.

*l* The trochlea.

*m m n n o* Caninus, or the elevator of the corner of the mouth; *m m* its origin; *n n* its insertion into the orbicularis oris; *n o* its insertion into the buccinator.

*p p* Orbicularis oris, or the orbicular muscle of the mouth.

*q r* The glandulous membrane which lines the inside of the lips; *q* that of the lower lip; *r* that of the upper lip, the glands of which are called *glandulae buccales*.

*s* The elevator of the chin.

*t u* The short nasal muscle of the upper lip.



*ww* Buccinator: it arises from three different places; the superior fibres arise from the alveoli of the upper jaw; the middle fibres from the ligamentum inter-maxillaris, and the inferior from the lower jaw: it is inserted into the glandulous membrane of the inside of the cheek and lips, and into the orbicularis oris.

*x* The anterior dilator of the nostril.

*y* The pituitary membrane on the inside of the alae narium.

*z* The salivary duct.

1 Vena jugularis externa posterior or superior.

2 Vena temporalis.

3 Arteria angularis.

4 Vena angularis.

5 Nervus superciliaris, the ramus superior, or frontalis: it is the most considerable of the three rami of the nervus orbitalis commonly called ophthalmicus, which is the first branch of the fifth pair of nerves: it passes through the foramen superciliare, is spent on the musculus frontalis, orbicularis, and integuments.

6 7 8 9 The second branch of the fifth pair of nerves called nervus maxillaris superior; 7 a branch which goes to the long nasal muscle of the upper lip; 8 a branch which goes to the inside of the nares towards the top of the nose; 9 branches which go to the upper lip.

10 The anterior cartilage of the outer ear.

11 The ear.

#### *In the Neck.*

*a* Glandula thyroidæa.

*bbccddefff* The carotid artery: it sends branches at *bb* to the glandula thyroidæa; *dd* branches which give off ramifications to the sterno thyroides; *e* branches which go to the caracohyoidæus; *fff* branches going to the aspera arteria: these branches of arteries are all accompanied with veins.

*g* An artery and vein running over the gula.

*bb* The third branch of the eighth pair of nerves.

*iiii* Œsophagus.

*kk* Trachea arteria, aspera arteria, or wind-pipe.

*lmn* Sternothyroidæus; *m* the thick fleshy part near its origin at the superior and internal part of the sternum; *l* its middle tendon; *n* its insertion into the thyroid cartilage.

*op* Crycothyroidæus; *p* its origin from the crycoid cartilage; *o* its thyroidal insertion.

*qq* The lower constrictor of the pharynx.

*r* Hyo-thyroidæus, or thyro-hyoidæus.

*s* The lower and anterior part of the thyroid cartilage.

*tu* Rectus capitis posticus major; *t* its origin from the spine or ridge of the lower oblique process of the second vertebra of the neck.

*uv* Rectus capitis posticus minor, or rather medius; *u* the part coming from its origin at the spine of the second vertebra of the neck: it begins its origin at the root of the spine of the oblique process, just where the rectus major ceases to arise, and continues its origin about three minutes up the spine or ridge; *v* the part going to be inserted by a tendon, short and broad, into the occiput, wrapping over the surface of the intervertebralis.

*yz* Obliquus capitis superior: *y* its fleshy origin, which is pretty deep, from the broad transverse process of the atlas; *z* its insertion into the occiput.

*AB* Obliquus capitis inferior; *A* its origin from all the length of the spine of the oblique process of the second vertebra of the neck above *A*, where it runs under the rectus capitis posticus longus: it is externally tendinous: it arises from all the posterior part of that vertebra which the intervertebralis does not cover: *B* its insertion into the anterior part of the broad transverse process of the atlas which the intervertebralis does not cover.

*CDEFGHIK* Longus colli; *CHDEF* the parts arising from the transverse processes of the third, fourth, fifth, and sixth vertebræ of the neck: *H* the part which is inserted into the anterior part of the body and transverse processes of the second vertebra, as *CDEF* run in part to be inserted into the anterior parts of the transverse processes and bodies of the vertebræ above them, as well as join the part *I*, which goes to be inserted into the anterior part of the body of the first vertebra; the part *H* may be divided into a distinct muscle, or nearly so, and probably the parts *DEF* may be so too; *IK* the part inserted into the anterior oblique process of the sixth vertebra; *I* the tendon; *K* a fleshy part. Its inferior origin is from the anterior lateral part of the body of the last vertebra of the neck, and the five uppermost of the back.

*LL*, &c. *MM*, &c. Intertransversarii posteriores colli; *LL*, &c. their insertions into the transverse processes of the vertebræ of the neck; *MM*, &c. their origins from the roots of the oblique processes, and the part betwixt them and the transverse processes. For each insertion there seems to be an origin from the lower oblique process of the vertebra below it, and the upper oblique process; or it rather seems to be at the root of the upper oblique process, and almost down to the lower oblique process of that vertebra, and betwixt the oblique and transverse processes where the intervertebralis does not cover. The lowest origin is from

the first vertebra of the back, part of which is inserted into the transverse process of the seventh vertebra of the neck.

NNN Intervertebrales appearing betwixt the originations of the intertransversarii posteriores colli: they arise from the ascending oblique processes of the five inferior vertebrae of the neck, and from the space betwixt the oblique processes of the uppermost vertebrae of the back: they are each of them inserted into the lateral parts of the bodies of the vertebra above their origin.

OOOOPQ The multifidæ of the spine, arising at OOOOP from the descending oblique processes of the vertebrae of the neck, partly externally tendinous, as marked at OOOO; the part O, from the descending process of the third vertebra, is wholly inserted into the spine of the descending process of the second vertebra of the neck, and the external part marked OO of the two vertebrae below that; so that there are originations from three different vertebrae which unite in their insertions into one: the short parts, or those originations which are nearest their insertions, arise most internally, and those of a middling length arise betwixt the long ones and short ones: the longest fibres, or those which arise most externally, have their insertions nearest the spinal processes, or their fellows on the other side; and the short ones nearest the oblique processes: those of a middling length have their insertions betwixt the two.

RTU Spinalis cervicis; R its origin from the second spine of the back, which origin is continued for about one third of the way down that spine towards its root: it arises also from the third spine or the ligamentum colli: near R it communicates with the semi-spinalis dorsi: T the part going to be inserted into the spinal process of the fourth vertebra of the neck; it is also inserted into the fifth spinal process; U the part going to be inserted into the spinal process of the sixth vertebra of the neck by a strong flat tendon: there is also a part under this which arises from the spine of the first vertebra of the back, from its tip about half way down to its root, and goes to be inserted into the spine of the seventh vertebra of the neck: it has an origination also from the ligament that goes from the spine of the second vertebra of the back to the first for its whole length, which is inserted into the spines of the neck.

This might be called interspinalis dorsi et cervicis, because its situation is entirely amongst the spines arising from those of the back to be inserted into those of the neck.

- 1111 Branches of the cervical nerves.
- 22 Branches of the cervical arteries.
- 33 Branches of the cervical veins.
- 4 Part of the jugular vein.
- 5 Ligamentum colli.

*In the Shoulder.*

ab Sub-scapularis.

def Teres major; d its origin from the inferior costa of the scapula; e a part externally tendinous, going to be inserted into the humerus betwixt the brachialis externus and caracobrachialis; f a part covered with communicating tendinous fibres, by which it and the fifth head of the extensor of the cubit are joined.

ghiiklm Longus minor, or the fifth extensor of the cubit; dg its origin from the inferior angle of the scapula, and tendinous surface of the teres major; h shews some remaining fleshy fibres where the longus major was attached to its flat tendon; ghiik its flat tendon from which the fleshy part iil arises at ii, and runs towards the tendon m to be inserted into the inside of the ancon; k shews the outline of the tendon of the latissimus dorsi and membrana carnosa, which is inseparably joined to the teres major, and makes with it but one tendon, though the fibres from this muscle, in some measure, intersect those of the teres major, and are inserted into the humerus, making the upper angle of the tendon along with the upper part of the teres major. The fibres which come from the anterior part of the latissimus dorsi are inserted the highest (being intersected by the posterior part which runs over the inferior angle of the scapula), going to their insertion with the lower part of the tendon of the teres major.

no Brachialis externus; arises from the upper part of the os humeri betwixt the beginning of the brachialis internus and the tendons of the teres major; o the part where it begins to be tendinous, and goes to be inserted into the extremity of the ancon.

ppq The inferior part of the serratus major anticus.

r Nervus cubitalis.

s Nervus radialis.

t Nervus musculo-cutaneus.

u Nervus medianus.

w Branches of the arteria and vena axillaris.

*Muscles, &c. on the Trunk.*

11, &c. 22, &c. The external intercostals; they arise at 1-1, &c. from the inferior edge and a little of the outside of each rib, the last excepted; they are a little tendinous, and descending obliquely downwards, are inserted at



22, &c. into the upper edge and a little of the outside of each rib, the first excepted.

33, &c. 44, &c. The internal intercostals: they arise at 33, &c. from the superior edge of the bony part of each rib except the first, not covering any of the outside, and from the edges of the cartilages of the ribs and a considerable part of the outside of them; they are chiefly externally tendinous, but partly fleshy, and ascending obliquely upwards and forwards, are inserted into the lower edge of the bony part of each rib, and into the edges and part of the outside of their cartilages, the last rib excepted.

55555 Branches of the *nervi costales*, lying upon the *transversales*, which go to the abdominal muscles and integuments.

The nerves and blood-vessels which are marked on the thorax are those which were distributed to the parts taken off, as the *obliquus internus* and *externus*, *latissimus dorsi*, *membrana carnea*, &c. and integuments; the nerves come from the *nervi dorsales* and *nervi lumbares*, the arteries from the *arteriæ intercostales inferiores* and *arteriæ lumbares*, the veins from the *venæ intercostales* and *venæ lumbares*.

*aabccdeeff* The *semi-spinalis* and *spinalis dorsi*; *aabeff* *semi-spinalis dorsi*, which arises fleshy from all that space of the tendinous surface of the *longissimus-dorsi* that lies betwixt its out line marked *aa*, and the dotted out line marked *bd* of the *spinalis dorsi* which lies under it, and then running over its strong tendinous surface, marked with dotted lines *bdee*, communicates with its fleshy fibres, and with them goes to be inserted into the spinal apophysis *ff*: it communicates with the *spinalis cervicis*, and is inserted under that part of it, *R*, which arises from the spine of the third vertebra of the back, or from the *ligamentum colli*: betwixt those two spines, it sends a strong tendon also down to the spine of the first vertebra of the back: *ccd* *spinalis dorsi*, which arises by a strong ligamentous tendon under the *semi-spinalis*, marked with dotted lines *bdee*, which sends off fleshy fibres communicating with the *semi-spinalis*, and are inserted with it into the spines of the back *ff*; it is also inserted into the inferior ridge of the second spine of the back, which insertion is continued about half way down from the end towards the root, and into the spine of the first dorsal vertebra, beginning its tendinous and fleshy insertion near the end, below the insertion of the tendon of the *semi-spinalis*, and continuing it for about half the length of that spine along its inferior ridge: its principal or strongest insertion is by a short, strong, roundish tendon into the spine of the seventh vertebra of

the neck, which is the only part appearing as at *ccd*, the rest being under the scapula and *semi-spinalis dorsi*.

The *semi-spinalis* seems to make its insertions into the extremities, or very near them, of the ten superior spines of the back, and the *spinalis* makes its insertions all the way from the insertion of the *semi-spinalis* along their inferior ridges down to the insertions of the *multifidæ spinæ*, which is half the length of the seven uppermost; the insertion then diminishes till it comes almost to a point in the tenth spine: its origin is entirely tendinous from the eleventh, twelfth, thirteenth, fourteenth, fifteenth, and sixteenth spinal processes of the back.

*ghhii* *Longissimus dorsi*; *g* the tendon inserted into the transverse process of the seventh vertebra of the neck: it is inserted by distinct flat tendons into the transverse processes of the vertebrae of the back; the lateral part of it is inserted into the lower convex edge of all that part of the ribs that lies betwixt the *sacro-lumbalis* and elevators of the ribs, tendinous and fleshy; or it is inserted into the rib of those that appear from under the *sacro-lumbalis* and elevators of the ribs (which are about seven), at its protuberating part, where it joins to the vertebra, and then the insertion becomes in each rib gradually broader, partly tendinous and partly fleshy, till it comes to the last rib, where it is about nine minutes broad: it is also inserted into all the transverse processes of the vertebrae of the loins the whole length of their inferior edges: its externally tendinous part, near the spines, is very thick, but diminishing as it advances towards the *sacro-lumbalis*. The fleshy part *bb* appears through the tendinous surface of this muscle; it arises from the spine of the last vertebra of the loins, and from the three uppermost spines of the sacrum strongly tendinous, as well as from the superior posterior edge of the ilium *ii*, and fleshy from the inside of the ligament *kkk*, which is a very strong one, especially near the ilium; at *b* it arises fleshy from all the anterior side of the ilium which is behind the transverse process of the os sacrum.

*lmnn*, &c. *o* *Sacro-lumbalis*; *l* the part that arises from, or with, the *longissimus dorsi* by a small tendon: in this subject it receives originations by flat tendons about half the breadth of the muscle from the superior edge of all the ribs except two or three of the uppermost; and is inserted, by distinct flat tendons, into the inferior edge of all the ribs except two or three of the lowest; and into the transverse process of the seventh vertebra of the neck, as at *o*; *nn*, &c.

mark its insertions into the ribs, each tendon running upon the surface of the muscle over about three ribs below its insertion; *m* the part externally fleshy.

*P p q r s t u* Transversalis abdominis; *p p* the part coming from its origin from the transverse processes of the three or four uppermost vertebræ of the loins; at *P* it is joined by a tendinous origin from the spine of the ilium; *p r* its origin from the lowest rib, which is continued down all the length of the inferior edge of the bony part of the rib from *r* to its conjunction with the vertebra; *P p q r s t* its fleshy part; *u* its tendon which is inserted into the ensiform cartilage and linea alba. It is more fully explained in Plate XXI.

*w* Arteria epigastrica, or the internal branch of the external iliaca.

*x x x* Branches of the nervi lumbares which go to the abdominal muscles and integuments.

*y y* External branch of the outer iliaca in two ramifications, accompanied by the external branch of the outer iliac vein, in two ramifications.

*z* Mammaria interna.

#### *In the right lower Limb.*

*e f f g* The iliacus internus; *f f* its origin from the ilium; at *g* it is tendinous on the surface; at *e g* it has an origin from the fascia lata: it joins in with the psoas magnus from its origin, and is with it inserted into the little trochanter of the thigh bone.—They seem to be but one muscle.

*b i k k k l l* Glutæus internus; *b* its origin from the ilium, externally tendinous, but inwardly fleshy; it is externally fleshy at *i*; at *k k k* are tendinous lines. It is inserted into the great trochanter at *l k k k l*.

*p q q r s t* The large adductor of the thigh; *p* the flat tendon by which it arises from the ligament running from the sacrum and coccyx to the ischium; *q q* the beginning of the fleshy part on this side, externally tendinous; *r* the external fleshy part; *s* the place where its thick belly begins to diminish, conforming to the belly of the gemellus; it is inserted by a strong tendon into the internal condyle of the os femoris behind the origin of the articular ligament and a little below it.

*u w* The gracilis; *u* the fleshy part; *w* the tendon.

*x y* Musculus parvus in articulatione femoris situs; *x* the fleshy part; *y* the tendon.

*1 1 1 2 2 3 4 5 6* Cruralis; *1 1 1* its origin by small flat tendons externally, but internally fleshy; *2 2* the place where the tendinous surface begins to disappear; *3 4* its insertion into the patella and lateral ligament; at *3* it is partly

divided for the reception of blood-vessels; and its origin at *6* is confounded with the two vasti.

*7 8 9* Vastus internus; *8* its origin along with the cruralis from the femoris; *9* its tendinous insertion into the patella; it has a fleshy insertion about half way up the femur into the external tendinous surface on the internal side of the cruralis; or these two may be joined together, and called but one penniform muscle, the tendon spoken of receiving the fleshy insertions of the vastus internus on one side, and on the other of that part of the cruralis marked *1 1 1 2 2 5 3*; and the part *3 4 6* only may be called cruralis, being distinct from the patella up to the part *6*, where, at its origin, it is confounded with the fleshy fibres of the two vasti; the origin of these muscles, except *3 4 6*, is from the upper part of the thigh bone, and continued down that bone to *6*.

*10* The lateral ligament of the external side of the patella which binds that bone to the external condyle of the os femoris.

*11* The middle or anterior ligament of the patella which binds that bone to the tibia.

*12* The lateral ligament of the internal side of the patella which binds that bone to the tibia.

*13 13* The burfal ligament of the knee, betwixt which and that marked *34* in Plate VI. lie the mucilaginous glands.

*14 14 15 16 17 18 19 20* Tibialis anticus; *14 14* its origin from the superior and anterior part of the tibia; *15* its tendinous origin from the inferior part of the os femoris: this is a very strong tendon, into which the fleshy part, which arises from the tibia at *14 14*, begins to be inserted, after running down about one third of the length of the tibia; soon after which insertion fleshy fibres run from this, obliquely downwards and inwards, to be inserted into a flat tendon, which is a continuation of what may be called the proper and inferior tendon of the tibialis anticus marked *20*: the internal or posterior part of this muscle, which is externally tendinous, makes a fleshy body much thicker than, or about twice as thick as, the anterior fleshy part: the superior part, running from the tibia obliquely downwards and outwards, and then from the external posterior surface obliquely downwards, is also inserted into the middle tendon: it ceases to be fleshy about the bottom of the tibia, where the internal or posterior tendon and middle tendon form the tendon *20*, which is inserted into the ossa cuneiformia and metatarsal bone; the part *19* into the os cuboides, it divides for the passage of some blood-vessels and then unites again; and the part *18* into the ossa cuneiformia posteriorly



running over the internal articular ligament as far back as the posterior edge of the splint bone.

23 24 25 25 26 26 27 27 Flexor digitorum pedis; 23 its tendinous and fleshy origin from the fibula and articular ligament, and from the superior and posterior part of the tibia, which origination is continued near half the way down that bone from a considerable roughness; the protuberating parts of which give rise to the four or five tendinous parts composing this muscle: they internix with the carnos part in this manner, the fibres descend obliquely downwards from the fascia 26 26 27 27 to be inserted into the tendon which lies next it; and that tendon receives the carnos fibres descending from the tendinous part which is next to it more internally; and that tendon sends fibres obliquely downwards to the next which is still more internal, and so on of the rest; one receiving fleshy fibres from each side, and that next it sending them off to each side, the external fascia only excepted, which sends fleshy fibres to this muscle only inwards, being the cover of this muscle: this fascia on the external side, where it is marked 26 26, gives origin to the fleshy fibres of the peronæus: it is joined by the fascia which arises from the internal posterior edge of the tibia when that fascia has run over the tibialis posticus, which it serves to bind down in its proper place. There is some part of the origin seen at 28 from betwixt the tibia and fibula: 27 27 The origin of the fascia which covers this muscle, which is strong and tendinous near its origin, from the articular ligament, and fibula, or rather from the articular ligament which runs from the external condyle of the humerus all the way down the external side of the tibia, and by which the fibula is attached to the tibia, as well as by a ligament which arises from the external edge of the tibia and descends obliquely downwards to be inserted into the fibula; 24 the external part of this muscle where the fleshy fibres may be seen through the fascia; 25 25 the tendon.

28 29 Poplitæus; 28 the tendon arising under the articular ligament.

30 The articular ligament which runs all the way down the fibula, and to the bottom of the tibia.

31 An articular ligament.

32 A ligament which binds the os calcis to the splint bone.

33 An articular ligament.

34 Arteria sciatica, accompanied with a vein.

35 35 Branches of the arteria glutæa, accompanied with veins and nerves.

36 A branch of the arteria obturatrix, accompanied with a vein.

37 A branch of the arteria obturatrix.

38 A branch of the vena cruralis, in which appear some valves.

39 A branch of the arteria poplitæa.

51 A branch of the vena poplitæa.

52 Arteria poplitæa.

53 Vena poplitæa, in which appears a valve.

54 Nerves going to the tibialis anticus. They are rami of the small sciatic branch.

55 Arteria tibialis anterior.

56 Vena tibialis anterior, in which appear some valves.

57 Glandula poplitæa, commonly called the pope's eye.

58 Vena saphæna.

59 The outer cartilage belonging to the coffin bone.

60 The inner cartilage belonging to the coffin bone.

40 41 42 42 43 44 45 49 The plantaris; 40 its origin from the os femoris; 41 a place where the gemellus is attached to it by fleshy fibres; 42 42 the tendon inserted at 43 into the first bone of the toe; 49 a ligament arising from the os calcis and inserted into this tendon, which keeps it steady upon the end of that bone; 44 a ligament arising from the first bone of the toe, and inserted into this tendon; the ligament 45, which arises from the sesamoid bone, is not attached to it but runs over it, and serves as well as the ligament 44 to prevent its starting from those bones when the joint is bent.

The insertion 43 is but half of its tendon, it being divided, and the other half inserted into the internal posterior edge of the same bone, leaving, by that division, a passage for the flexor digitorum pedis, which is seen at 25 lying betwixt the tendon of the plantaris and the bone.

46 A capsular ligament.

47 An articular ligament.

48 A capsular ligament.

49 A ligament which binds the tendon of the plantaris to the os calcis, and may be called part of the origin of the short flexor of the toes.

50 An articular ligament.

*In the left lower Limb.*

*a* Arteria cruralis.

*b* Vena cruralis.

*b b i* Poplitæus; *b b* its insertion into the tibia externally tendinous; *i* the fleshy part coming from its origin from the external condyle of the femoris which is marked 28 on the left limb in this plate.

*k l l m n o p* Plantaris; *k* the fleshy belly; *l l m n* the tendon; *o* a ligament arising from the os calcis and inserted into the tendon *m* of the plantaris, which it confines in its place; its

fellow is marked 49 on the left limb in this plate. This ligament may be called part of the origin of the short flexor of the toes; *n* its insertion into the first bone of the toe; the external insertion is marked 43 on the right lower limb in this plate; betwixt these insertions the tendon of the flexor digitorum pedis runs down to its insertion into the coffin bone; *p* a ligament arising from the first bone of the toe and inserted into the tendon.

*q* A ligament which arises from one sesamoid bone and runs over the tendon of the plantaris to be inserted into the other, and serves to bind down that tendon.

1 2 3 Tibialis posticus; 1 the fleshy belly; 2 3 the tendon inserted into the tendon of the flexor digitorum pedis.

4 Flexor digitorum pedis, marked 23 24 25 26 26 27 27 on the right limb in this plate.

10 11 12 13 15 16 Tibialis anticus; 10 the fleshy part marked 14 on the left limb in this plate; 11 the part marked 16; 12 the part marked 19; 13 the part marked 18; and 15 is one tendon of the fleshy part of this muscle, inserted into the ossa cuneiformia posteriorly running over the internal articular ligament as far back as the posterior edge of the splint bone; the part 16 is inserted into the superior and anterior edge of the metatarsal bone; the part marked 13 runs under the tendon 15 to its insertion into the ossa cuneiformia.

17 17 18 The internal lateral ligament, which binds the patella to the os femoris; 18 its origin from the os femoris; 17 17 its insertion into the patella.

19 19 20 The internal lateral ligament, which binds the patella to the tibia; 20 its origin from the tibia; 19 19 its insertion into the patella.—This is marked 12 on the left limb in this table.

21 22 The external lateral or anterior ligament, which binds the patella to the tibia, marked 11 on the left limb in this plate; 21 its origin from the tibia; 22 its insertion into the patella.

23 24 The internal, lateral, articular ligament, which binds the tibia to the os femoris.

25 25 The burfal ligament of the knee, with some few of the mucilaginous glands left on which lie betwixt this ligament and that marked 15 15 15 15 in Plate VI.

26 Interosseus, &c.

27 28 An articular ligament.

34 The articular ligament of the fetlock joint.

35 The burfal ligament. This is a strong thick ligament, and about this place almost car-

tilaginous. To this the tendon of the extensor digitorum is strongly attached.

36 A burfal ligament.

37 An articular ligament.

38 An articular ligament.

39 Branches of the vena tibialis anterior.

40 A nerve called sciaticus internus.

41 The inner cartilage belonging to the coffin bone.

*In the right upper Limb.*

*abc* Brachialis internus. It arises at *a* from the neck of the humerus, and the internal lower part of the scapula; *c* the part which goes to be inserted into the radius a little below the insertion of the biceps and more internally.

*deffghi* Flexor digitorum profundus; *de* the first or largest head, explained in Plate VI. with the other three heads of this muscle; *d* the fleshy part; *e* the tendinous part; *gh* the third described head; *g* the fleshy part; *b* the tendon; *i* the last described head, appearing here a little; *ff* the common tendon, inserted into the coffin bone.—See Plate XXI. for a fuller explanation.

*k* A ligament which runs down the small end of the ulna, to be inserted into the ligament or bones of the carpus, and to which the fascia is inserted on this side, which covers the bending muscles on the cubit.

*lm* Flexor digitorum sublimis; *l* a little of the fleshy part; *m* the tendon inserted into the great pastern.

*nnnn* Articular ligaments.

*ooo* Burfal ligaments.

*p* Vena cephalica.

*q* Interosseus, &c.

*r* The outer cartilage belonging to the coffin bone.

*In the left upper Limb.*

*abc* Brachialis internus, made a little concave at *b* by the biceps; *c* its insertion into the radius.

*d* Nervus medianus.

*e* Arteria brachialis.

*f* Vena brachialis.

*g* Vena cephalica.

*i* Flexor carpi radialis.

*lm* Flexor digitorum sublimis; *l* the fleshy part; *m* the tendon.

*nopp* Flexor digitorum profundus; *n* the head marked *gh* on the right upper limb in this plate; *pp* the tendon.

*qqqq* Articular ligaments.

*rrr* Burfal ligaments.

*s* Interosseus, &c.

*t* The inner cartilage belonging to the coffin bone.



*Description of Plate XI.**Muscles, &c. in the Head.*

*a* Musculus septimus oculi suspensorius, arises from the margin of the hole through which the optic nerve passes into the eye, and is inserted (being divided into several fleshy portions) into the lower or posterior part of the sclerotica below the termination of the other muscles.

*b* Obliquus superior.

*c* The trochlea.

*d* Obliquus inferior.

*e* Attolens.

*f* Deprimens.

*g* Adducens.

*h* Abducens.

*i* The femi-lunar fold, formed by the conjunctiva, which incloses a sort of gland, the internal part of which is a thick and firm glandular substance terminating in fat; the external or lunar edge is broad and very thin, of a cartilaginous nature, before which lies the caruncula lachrymalis, or glandula lachrymalis inferior.

*k* The optic nerve, where the eye is cut away.

*l m n n o o o p* The glandulous membrane of the inside of the lips and cheek; *o o o* the part in which the buccinator is inserted, which is thicker than the rest and more free from glands; *l m p* the glands called glandulæ labiales; they are thickest near the corners of the mouth and beginning of the upper lip; *n n* Glandulæ buccales.

*q* The elevator of the chin.

*1* Vena angularis.

*2* Arteria angularis.

*3* Nervi maxillaris inferioris; they are the third branch of the fifth pair of nerves.

*4 5 6* Nervi maxillaris superioris; they are branches of the third branch of the fifth pair of nerves; *4* branches which go to the upper lip; *5* a branch which goes to the inside of the nostril towards the tip of the nose; *6* a branch which goes to the long nasal muscle of the upper lip.

*7 8 9* The cartilages of the nose; *7* the middle portion; it is a broad cartilaginous lamina, joined by a kind of symphysis to the anterior edge of the middle lamina of the os ethmoides, to the anterior edge of the vomer, and to the anterior part of the groove formed by the ossa maxillaria, as far as the nasal spines of these bones: this lamina completes the septum narium, of which it forms the principal part; *8* the anterior lateral cartilage which forms the tip of the nose, or the superior anterior part of the

nostril; *9* the posterior and inferior lateral cartilage, or rather bone, for in aged horses it seems to be perfect bone, which helps to form the inferior parts of the nostrils.

*10* The anterior cartilage of the outer ear.

*11* The outer ear.

*In the Neck.*

*a* Rectus anticus brevis, or minor; *a* its origin from the lateral part of the body, rather anteriorly, and from the root of the transverse process of the first vertebra of the neck. It is inserted into the occiput in its anterior process or appendix, or to the edge of the bone adjoining to it.

*d* Cricoarytenoidæus lateralis.

*e* Cricoarytenoidæus posticus.

*f* A very small part of the arytenoidæus.

*g h h h h* Œsophagus; *g* the membrane bared by taking away the lower constrictor of the pharynx, and freed a little from its attachment to the thyroid cartilage *i* to shew the insertion of the cricoarytenoidæus lateralis.

*i k* The thyroid cartilage; at the lower process, tied to the crycoid cartilage by the ligament *m*.

*l* The annular, or crycoid cartilage.

*n* The ligament by which the thyroid or scutiform, and the crycoid or annular, cartilages are tied one to the other in the anterior part.

*m* A ligament which ties the lower process of the thyroid or scutiform cartilage to the crycoid cartilage.

*ooo* Trachea arteria, aspera arteria, or windpipe.

*p p* The carotid artery, or carotis communis.

*1* Arteria carotis externa, or the external carotid.

*2* Arteria carotis interna, or the internal carotid.

*q q* The trunk of the eighth pair of nerves.

*3* A branch of the eighth pair of nerves.

*4* Arteria cervicalis, or the cervical artery.

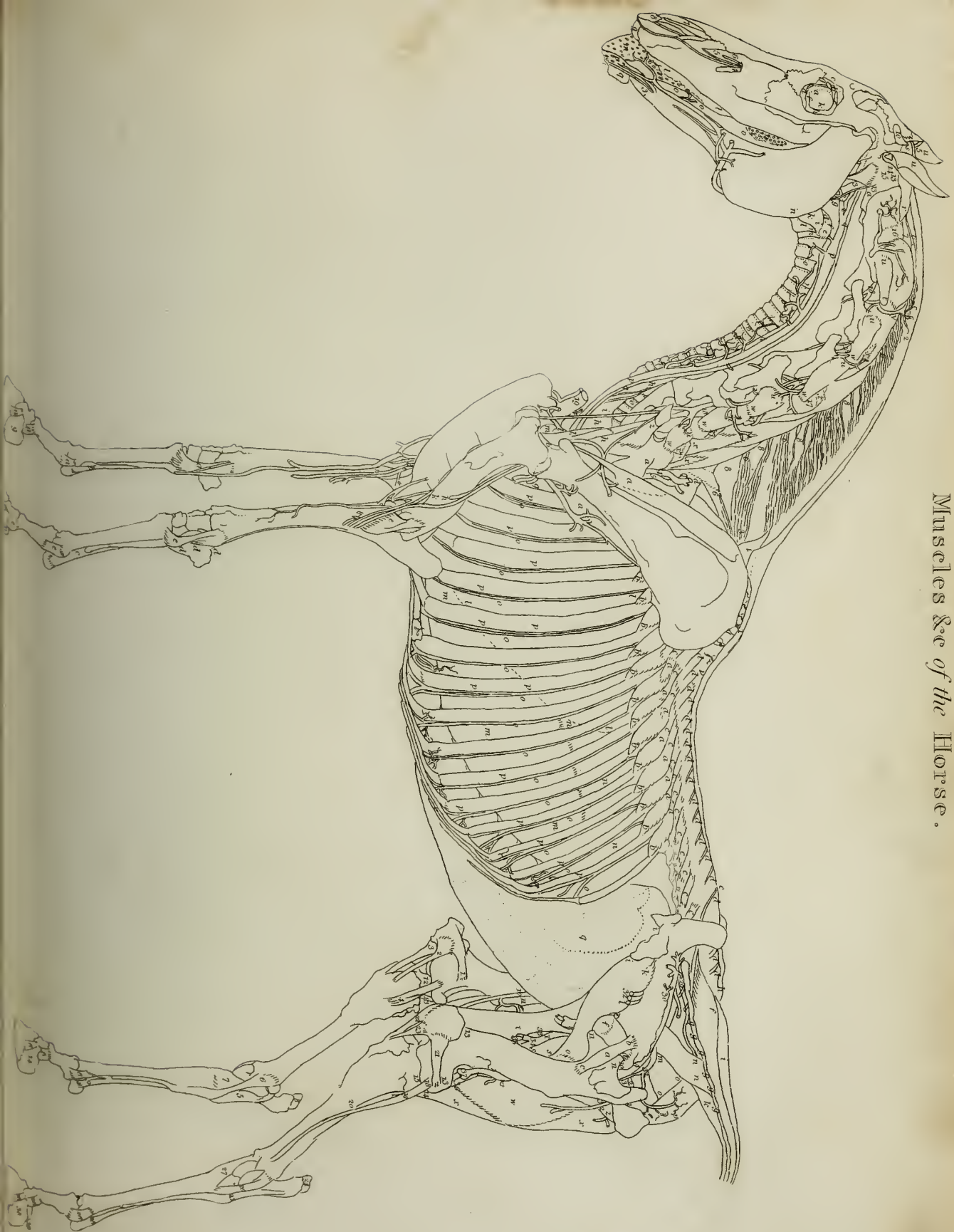
*5* Vena cervicalis.

*r s* Rectus posticus brevis, or internus; *r* its origin from the atlas; *s* its insertion into the occiput.

*t u* Intervertebralis; *t* its origin from the ascending oblique process of the third vertebra; *u* its insertion into the lateral part of the body of the second.

*u w, &c.* The five inferior intervertebrales, which answer to the same explanation as the superior, only that the lowest arises from the space betwixt the oblique processes of the uppermost vertebra of the back, and the rest arise from the superior oblique processes only: their

Muscles &c of the Horse.







*Muscles &c of the Horse.*







anterior and inferior fleshy parts seem to be confounded with the intertransversarii posteriores colli, but their upper and posterior parts are distinct, the nerves and blood-vessels coming from betwixt the vertebræ to go to the back of the neck running betwixt them.

*x x x x y* The multifidus of the spine arising at *x x x x* from the descending oblique processes of the vertebræ of the neck, externally tendinous; *y* its uppermost insertion into the spine of the descending process of the second vertebra of the neck. This is more fully explained in Plates X. and XXI.

*z* One of the scalenæ, or rather the elevator of the first rib arising at *z* from the transverse process of the seventh vertebra of the neck. It is inserted into the first rib.

*1 2 2 3 4 5 6 6, &c. 7 8 8, &c.* Ligamentum colli; it is a double ligament; *1* the superior or posterior part, which begins to distinguish itself about the fifteenth spine of the back on the lateral part of its extremity, by being broader than the extremity of the spine; from which projecting part the inferior part of the trapezius begins about the fourteenth spine; it distinguishes itself about this place also by a small groove or channel that is formed betwixt it and its fellow; but its origin is not to be absolutely fixed in this place, because in conjunction with the interspinal ligaments it runs down the back and loins, and probably to the end of the tail, joining both sides together; they are on the spinal process of the vertebræ of the back, about one minute broad, or rather more, then extending in breadth as they arise from the superior vertebræ till they come to the third spinal process, where they are about four minutes broad, they leave their origin in two distinct portions, joined only by an intervening ligament, the fibres of which run in a transverse direction from one part to the other: there is a deep groove or channel continued betwixt them for about one part and six minutes, as they ascend towards the occiput, as far as *2*; then diminishing in breadth, they become almost round, and insert themselves into the occiput at *5* about two minutes diameter, lying both close together; *3* the part of the ligament arising from the spines of the second and third vertebræ of the back; *4* an intervening ligament, which joins the two origins of the ligamentum colli together; *6 6 6 6 6 6* the insertions into the spinal processes of the superior vertebræ of the neck; *7* the interspinal ligament betwixt the first and second vertebræ of the neck; *8 8 8 8* a strong communicative membrane which fills up the opening betwixt the insertions of this

ligament, on which some straggling filaments of the ligament are expanded.

*13 13 14 15* The capsular ligament of the articulation betwixt the head and the first vertebra of the neck; *13 13* the part inserted into the first vertebra; above *14* it is inserted into the occiput; *15* its insertion into the long process of the occipital bone, which seems to be a considerable addition to the mamillary process of the temporal bone.

*16* The capsular ligament of the articulation betwixt the first and second vertebræ of the neck; the posterior part covers the spinal marrow, the lateral part covers the articulating part of the second vertebra of the neck, where it is covered with a smooth cartilage.

*17 17 17 17* Shew the capsular ligaments of the articulations of the five inferior vertebræ of the neck, made by their oblique processes: they arise free from the bone just at the extremity of the oblique processes, and continue their origin round the articulating cartilages.

*18 18, &c.* The vertebral veins, arteries, and nerves of the neck.

*19* Part of the jugular vein.

*In the Trunk.*

*a b, &c.* The elevators of the ribs; they arise at *a* externally tendinous, from the transverse processes of all the vertebræ of the back (except the last) and from the last of the neck, to be inserted into the superior edge of all the ribs, each being inserted into the rib immediately below its origin, and running from its origin in a radiated manner; the posterior part, or that next the spine, running to the upper part of the rib almost transversely; the anterior part, or that furthest from the spine, running in an oblique direction downwards, to be inserted into the rib about nine minutes from its articulation with the vertebra, for about ten of the inferior ribs; then they diminish in length gradually, till the length of their insertion is but about six minutes from the articulation at the uppermost ribs.

*c c, &c. d d, &c.* Multifidi spinæ; *c c, &c.* their tendinous originations from the transverse processes of the vertebræ of the back; *d d, &c.* their tendinous and fleshy insertions into the spines of the back, loins, and sacrum; their origins and insertions are both tendinous and fleshy, but at the external parts of the origins, from the extremities of the posterior protuberances of the transverse process, are the strongest tendinous parts, the external tendon expanding itself as it advances towards the insertions, leaves it externally fleshy near the insertions; but upon some of the superior spines, particularly those



which lie under the scapula, it becomes externally tendinous near its insertions; the insertions nearest the ends of the spines are tendinous for the most part, those of the loins forming a roundish tendon about half a minute broad, and a quarter, or near it, thick.

*e f* The lateral muscle of the tail arising at *e* from the spine of the last vertebra but one of the loins; *f* the fleshy part; it goes to be inserted by a tendon into the oblique process of the third vertebra of the tail, and also into two or three of the lower ones, and then joins in with the elevating muscles of the tail.

*g g*, &c. The inter-transverse muscles of the tail arising from one vertebra, and inserted into the next, and so on through the whole length of the tail. There are muscles which arise from the upper or posterior part of the transverse processes, and are inserted into the oblique processes of the next but one or two below them.

*b* The ligament which runs over the spines of the os sacrum.

*i* The elevating muscle of the tail, beginning its origin from the inferior or posterior edge of the third spinal process of the os sacrum, which origin is continued from near the end of the spine about half way towards its root; its origin is continued fleshy from the sides, edges, and inter-spinal ligaments of the spinal ligaments of the spines of the sacrum below that, from the whole length of the last of them, and after passing over one is inserted into the next oblique process, or next but one, below.

*k* The depressing muscle of the tail, beginning its origin from under the transverse process of the third vertebra of the sacrum, and continuing from the transverse processes of those below from the whole breadth of them, and the inter-transverse ligaments. The fleshy fibres are inserted into the bodies of the vertebræ or bones of the tail.

*l l l* The lungs appearing through the pleura.

*m m m n n n* The diaphragm appearing through the pleura; *m m m* the fleshy part; *n n n* the tendinous part.

*o o*, &c. *Nervi intercostales*.

*p p*, &c. *Arteriæ intercostales*.

*q* The intestines, seen through the peritonæum.

#### *In the right lower Limb.*

*a b c* *Musculus parvus in articulatione femoris situs*; *a* its round fleshy belly; *b* the flat tendon by which it arises over the tendon of the rectus cruris; *c* the flat tendon by which it is inserted into the os femoris.

*d e f* The head of the rectus, left on to shew how that muscle arises from the os innomina-

tum, being hid in Plate VI. under the *glutæus medius* and *glutæus internus*, and in Plate XX. under the *glutæus internus*; *d* its origin from the external or posterior part of the inferior spine of the ilium, covered at *b* by the thin flat tendon of the *musculus parvus in articulatione femoris situs*; *e* its origin from the anterior part of the inferior spine of the ilium; *f* the place where the muscle is cut off.

*i i k l o* *Iliacus internus*; *i i* the anterior part arising from the spine of the ilium; *k l* posterior part arising at *k l* from the fascia lata; *o* the tendon, inserted into the lesser trochanter; at *l* a fascia arises which runs over the posterior part of this muscle.

*m n n o o* *Levator ani*, coming from its origin from the acute process of the ischium near *m*, it is inserted at *n n* into the transverse processes of the second, third, and fourth bones of the tail, and at *o o* into the internal sphincter ani.

*p* The internal sphincter ani.

*s s* The insertion of the *pectinæus* into the os femoris.

*t u* *Sartorius*; *t* the fleshy part, or rather the muscle, which is flat and fleshy; *u* being only a fascia by which the muscle is confined in its proper place.

*T* A sort of fascia under which these nerves and blood-vessels lie, and to which they are attached as well as the neighbouring muscles, and by that means kept in their proper places. The nerves and blood-vessels are marked as protuberating under it and seen through it.

*w x x* The *gracilis*; *w* the fleshy part; *x x* the fascia by which it is confined in its proper place.

*z* Part of the adductor of the thigh, arising at *z* from the ischium; it is inserted externally tendinous into the os femoris.

*1 2 3* *Obturator internus* with the *gemi*; *1* the inferior of the *gemi*, arising from the ischium; *2* the tendon of the obturator internus coming from the inside of the ischium; *3* the superior of the *gemi* going to its insertion with the tendon of the obturator internus, and the other *gemi* into the internal lateral part of the great trochanter.

*4* A tendinous fascia arising at *4* from the point of a little protuberance of the ischium, which spreading and descending is attached to the adductor magnus; it serves to bind down the tendon of the obturator internus, obliging it to lie in a concave form posteriorly: it is a guard for the nerve which accompanies it (lying partly over it) preventing its being over braced by that tendon's starting from the bone, by bringing itself into a straight line when in action.

10 11 12 The burfal ligament of the hip joint arising at 10 from the os innominatum, at 11 11 from the neck of the os femoris

13 13 Mark where the burfal ligament had its origin from the os femoris, which inserts itself into the patella and tibia.

14 A ligament which binds the cartilage 15 to the tibia; behind 14 the top of the tibia is incrusted with a smooth cartilage, which serves the tendon of the popliteus to slide upon.

15 The outer semi-lunar cartilage in the joint of the knee.

18 19 The articular ligament of the knee; 18 its origin from the os femoris; 19 its insertion into the fibula.

20 A ligament which binds the fibula to the tibia.

21 The external lateral ligament which binds the patella to the os femoris.

22 The internal lateral ligament which binds the patella to the tibia.

23 The anterior ligament which binds the patella to the tibia.

24 Part of the tendon of the gemellus, which is inserted into the os calcis, cut off at 24.

25 A strong ligament which binds the os calcis to the splint bone.

26 26 26 26 The external articular ligaments of the foot.

27 A ligament running from the astragalus to the metatarsal bone.

28 Interosseus, &c.

29 Iliaca minor.

30 Arteria glutæa.

31 Pudica communis.

32 32 Arteria obturatrix.

33 Arteria cruralis.

34 Vena cruralis.

35 Nervus cruralis.

36 Arteria poplitæa.

37 Vena poplitæa.

38 The outer cartilage belonging to the coffin bone.

39 The inner cartilage belonging to the coffin bone.

*In the internal side of the left lower Limb.*

1 The internal lateral ligament of the patella, which binds that bone to the os femoris.

2 The internal lateral ligament of the patella, which binds that bone to the tibia, marked 22 on the right limb in this plate.

3 The anterior ligament, which binds the patella to the tibia, marked 23 on the right limb in this plate.

4 The internal articular ligament of the knee joint.

5 A ligament which binds the os calcis to the astragalus and os naviculare.

6 6 6 6 The internal articular ligaments of the foot.

7 A ligament which runs from the astragalus to the metatarsal bone, marked 27 on the right lower limb in this plate.

8 Part of the tendon of the gemellus, which is inserted into the os calcis, cut off at 8.

9 Interosseus, &c.

10 Arteria cruralis.

11 Vena cruralis.

12 The inner semi-lunar cartilage in the joint of the knee.

13 The outer semi-lunar cartilage in the joint of the knee.

14 The inner cartilage belonging to the coffin bone.

*Muscles, &c. on the right upper Limb.*

a a b Subscapularis; b its insertion into the humerus.

c Interosseus, &c.

d d d Ligaments which bind the orbicular bone to the radius, the bones of the carpus, and metacarpal bone.

e e e e Articular ligaments.

f Nervus cubitalis.

g Nervus axillaris.

h Nervus radialis.

i Nervus musculo-cutaneus.

k k Nervus medianus.

l l Arteria axillaris.

m Vena axillaris.

n Vena cephalica.

o The outer cartilage belonging to the coffin bone.

p The inner cartilage belonging to the coffin bone.

*In the internal side of the left upper Limb.*

a a a a Articular ligaments.

b Interosseus, &c.

c Nervus medianus.

d Arteria brachialis, or the humeral artery.

e Vena brachialis, or the humeral vein.

f Vena cephalica.

g The inner cartilage belonging to the coffin bone.

*Description of Plate XII.*

*Muscles, &c. in the Head.*

a a b a a b The anterior muscles of the anterior cartilage: they arise under the epicranium, thick and fleshy, and are inserted into the anterior angle of the anterior cartilage of the outer ear.

c c The lateral muscles of the anterior cartilage.



lage of the outer ear : they arise from above the orbits of the eyes, and are inserted into the anterior cartilages of the external ear.

*dd* The origenes. Their origin is, probably, from the epicranius ; as they are not connected to the bone : they are inserted into the anterior cartilage.

*ee* The insertion of the middle parts of the retrahens, which is about one third of the way from the root of the ear to the tip, and about the middle of its convexity.

*ff* Muscles which run from the anterior cartilage to the external ear.

*hh* Muscles which arise from under the lateral muscles *cc* in this plate, and are inserted at the inferior angles of the openings of the ears anteriorly.

*i* The lateral depressor of the outer ear ; arising from the quadratus colli, and inserted close by the lateral muscle of the anterior cartilage *c* in this plate into the inferior angle of the opening of the ear posteriorly.

*kk* *K* The epicranius, or muscle of the scalp ; *K* the tendinous expansion that goes to the elevators of the upper lip, and wings of the nose ; *kk* the fleshy parts which run over part of the orbicular muscles of the eye-lids, and are inserted in the external skin.

*lll 2 m lll 2 m* The orbicular muscles of the eye-lids ; *2* the origin of the fibres from the ligament, by which the conjunction of the eye-lids in the great canthus is tied to the nasal part of the os unguis.

*LL* The corrugators of the eye-brows.

*nn NN 4 4 nn* *N* The elevator of the upper lip and corner of the mouth : about the inner angle of the eye it arises from the bone : from *n* to *n* it arises from the epicranius ; *NN* that part which is expanded under the dilator of the nostril and mouth ; *4 4* the part which runs over the dilator of the nostril and mouth, and is inserted in the corner of the mouth.—The part *4 4* is the elevator of the upper lip ; the part *N N* the elevator of the alæ nasi and upper lip.

*o 3 5 o 3* The zygomatici ; *3 5* its origin from the orbicular muscle of the eye-lid ; *o* the part which goes to be inserted into the corner of the mouth.

*p* The lateral dilators of the upper lip and nostrils.

*qq qr* The orbicular muscle of the mouth ; *r* fibres which intermix with the fibres of the long nasal muscles of the upper lip.

*ss* Part of the latissimus colli, which is inserted into the lower jaw bone.

*tuu* The tendons of the long nasal muscles of the upper lip ; *t* the union of the tendons.

*ww* The anterior dilators of the nostrils.

*x* Part of the membrana pituitaria, which lines the whole internal nares, the cellular convolutions, the conchæ, the sides of the septum narium, and by an uninterrupted continuation, the inner surface of the sinus frontalis and maxillares, and of the ductus lacrymalis, palati, and sphenoidalis : it is likewise continued down from the nares to the pharynx.

*In the neck, breast, shoulders, and trunk.*

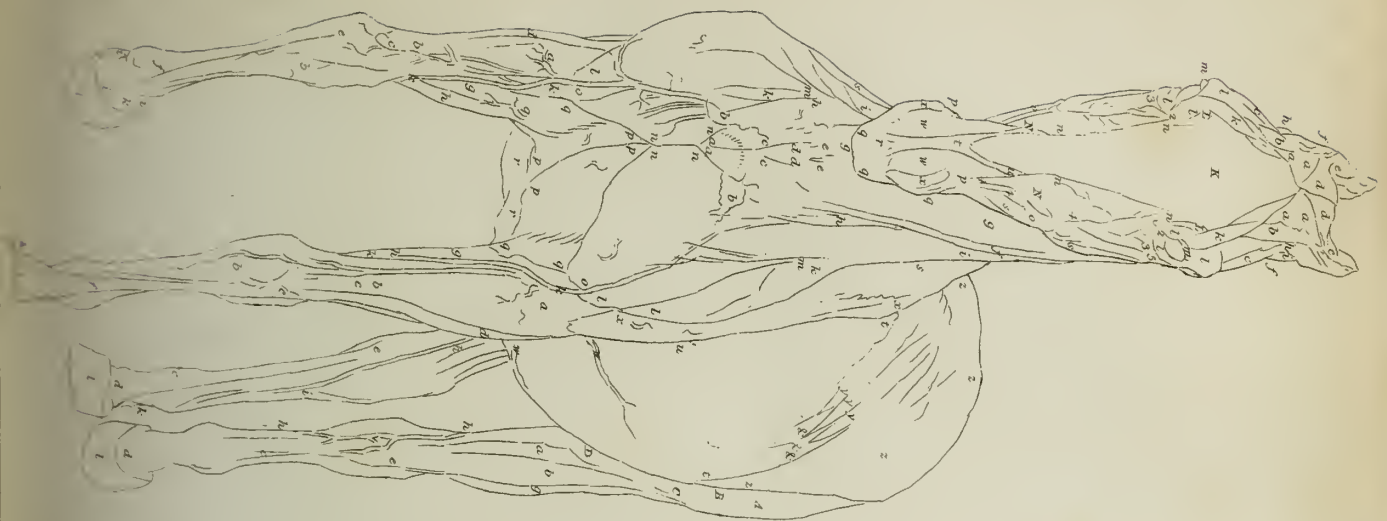
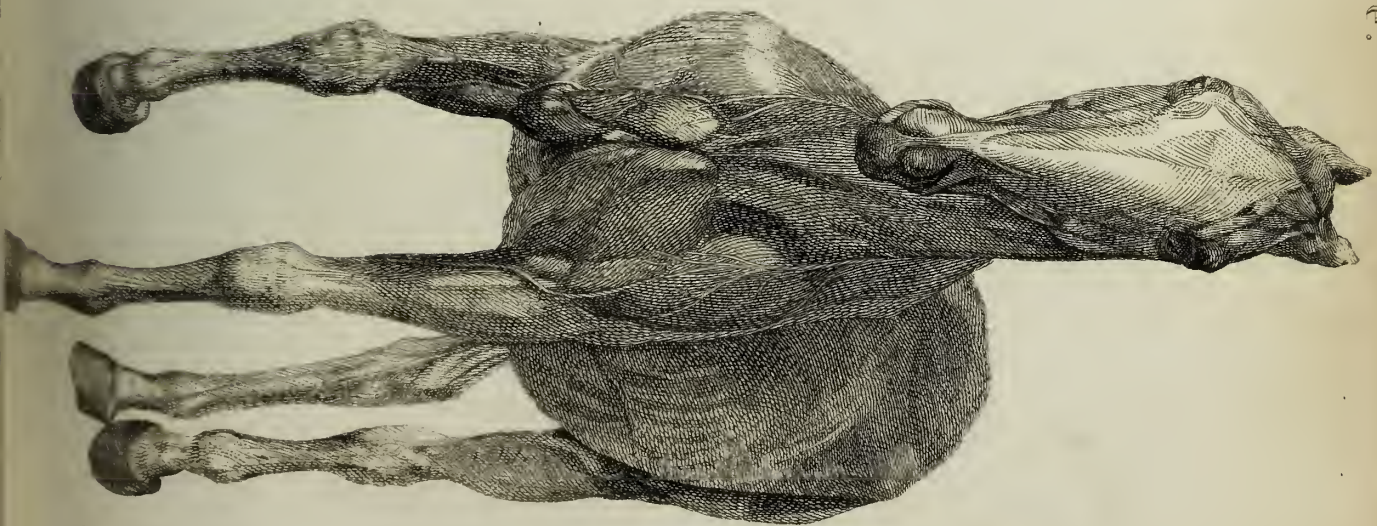
*abcdefgh ss* The quadratus genæ latissimus colli, or broad muscle of the neck ; *a* its origin from the sternum, a little below the top ; *b* its origin from the proper, or inverting membranes of the pectoral muscle, or from the membranous continuation of the membrana carnosa ; over that muscle at *c* the fleshy parts of each side recede from each other ; and are united only by the tendinous expansion *d*, which becomes fleshy again, or gives rise to the fleshy fibres at *e* ; *f* the part under which the jugular vein protuberates ; *g* the part under which the sterno-mastoideus, or rather sterno-maxillaris, protuberates ; *h* a part which runs over the levator humeri proprius ; at *ss* it runs over the lower jaw, and is about the lower *s* inserted into that bone.

*ikll* The proper elevator of the humerus ; *i* that part which arises tendinous from the processus mastoideus, and by a tendinous membrane from the ridge of the occiput : this part alone may be called levator humeri proprius ; and the part *k*, which lies partly under it and arises from the transverse processes of the four uppermost vertebræ of the neck, may be called musculus ad levatorem accessorius, being a distinct muscle till it comes to be joined with or inserted into the levator humeri proprius, just below the opening where the nerve *m* comes out ; *ll* the part which goes to be inserted into the humerus along with the transverse or superior part of the pectoralis between the biceps, and brachii internus.—The part arising from the processus mastoideus and ridge of the occiput is the anterior and superior part of the trapezius : it has the coracohyoideus strongly attached to it, which it confines in its proper situation agreeably to the curvature of the neck.

*mm* Nerves.

*nnoppqq r* The pectoral muscle ; *nn o* the superior part which arises from the superior part of the sternum for about one third of its length, and running in a transverse direction over the inferior part is inserted along with the levator humeri proprius by a flat membranous tendon into the humerus, betwixt the biceps and brachii internus ; *pp qq* the part of this muscle which arises from the anterior and inferior part

Muscles of the Horse.







of the sternum for about two thirds of its length, and runs down upon the muscles lying on the inside of the cubit; a little below *q q* it ceases to be fleshy; *r* the part which arises from the aponeurosis of the external oblique muscle of the abdomen, and is inserted into the head of the os humeri internally.

*s* Some of the superior parts of the trapezius. In this view none of the inferior parts can be seen.

*t t u v w x x y y z z z z* Membrana carnosa; *t t* the posterior and inferior origin of the fleshy fibres; *u* the thickest part of this fleshy pannicle going to be inserted along with the latissimus dorsi and teres major into the humerus; *w w* large branches of veins which are spread in this muscle; *x x* the origin of the superior portion of the carnosus fibres of this muscle, which are but very thin, all tending towards the cubit, and becoming a mere membrane as they pass the juncture of the elbow, are thus expanded over the muscles, &c. below, adhering in some places to the edges of the muscular ligaments, or those ligaments which bind down the tendons of the muscles to keep them in their proper places; *y y z z z z* the posterior and inferior tendinomembranous part which runs over the loins, back, and part of the abdomen; the parts lying under which protuberate, as the serratus major pectus at *y y y*, and the ribs at *z z z*; it then goes down the lower limbs with, or is lost in the fascia of the latissimus dorsi, fascia lata, and other membranous expansions which are spread upon the muscles, &c. of the lower limbs.

#### *In the upper Limb.*

*a b b c d e f g h i i k k k* The membranous continuation of the fleshy pannicle down the upper limb, as it covers the muscles, &c. which lie on that limb; *a b b* the extensor carpi radialis; *a* the fleshy belly; *b b* the tendon; *c* the tendon of a muscle which is analogous to a combination of the abductor pollicis manus, extensor longus, and brevis pollicis manus, and indicator in the human body: it arises from the lateral part and ridge of the radius, and (in a horse, the thumb and fore-finger being wanting) is inserted into the imperfect metacarpal bone of the fore-finger, or lost in the ligaments inserted into that bone, or rather attached to them before their insertion: *d e f* extensor digitorum communis; *d* the fleshy belly; *e f* the tendon; *g* flexor carpi radialis; *h* flexor carpi ulnaris; at *i i i* this membranous expansion goes under the hoof; *k k k* vena cephalica, which arises from under the hoof, and falls into the jugularis externa; on

the radius it is called vena radialis, and below that vena plantaris.

*l* The hoof.

#### *In the lower Limbs.*

*A B C D a b c d e h h i i k* The membranous continuation of the fleshy pannicle down the lower limbs along with the fascia lata, &c. as they cover the muscles, &c. which lie upon those limbs; *A* the musculus fascia lata protuberating; *B* vastus externus; *C* the patella; *D* the anterior ligament which binds the patella to the tibia; *a* the fleshy part of the tibialis anticus, making its appearance through the fasciæ that cover it; *b c d* the extensor longus digitorum pedis; *b* the fleshy belly; *c d* the tendon; *e* a sort of tendon formed by these fasciæ, which joins with the tendon of the extensor longus digitorum pedis; *g* the fleshy belly of the peroneus; *h h* a branch of the crural vein, called vena saphæna, or saphæna major; *i i k* the tendon of the plantaris.

*l* The hoof.

#### *Description of Plate XIII.*

##### *Muscles, &c. in the Head.*

*a* The anterior dilator of the nostril.

*b c d d* The lateral dilator of the nostril and upper lip; *c* its origin; *d d* the part which is inserted into the nostril.

*e f g h* The long nasal muscle of the upper lip; *f* its origin; *g* its tendon, where it unites with its fellow; *h* its insertion into the upper lip.

*k k* Alæ naris.

*l m n o* A muscle arising by a small tendon along with the long nasal muscle of the upper lip at *m*; *n* its insertion by a small portion into the wing of the nose; *o* the principal part going to be inserted into the concha narium inferior.

*p* Part of the membrana pituitaria which lies upon the opening of the nares.

*P* Musculus caninus, or the elevator of the corner of the mouth.

*Q Q Q* The orbicular muscle of the mouth.

*q r r* Musculus ciliaris; *q* its origin.

*s t* The broad ligament of the eye-lids, which are membranous elongations formed by the union of the periosteum of the orbit and pericranium, along both edges of each orbit.

*u v* The ball of the eye; *u* the pupil; *v* the iris.

*x x y* The temporal muscle; *x x* its origin; *y* its insertion into the coronary process of the under jaw-bone.

*z* The masseter.

*1* Arteria angularis.



- 2 Vena angularis.
- 3 The salivary duct.
- 4 Branches of the nervus maxillaris inferior: they are branches of the third branch of the fifth pair of nerves: they are accompanied with an artery from the temporal artery which communicates with the arteria angularis.

*In the Ear.*

*ab* A muscle arising at *a* from the anterior cartilage, and inserted at *b* into the external ear.

*c* A muscle which arises by two fleshy heads from the internal surface of the anterior cartilage, and is inserted into the lower convex part of the external ear near the root, nearer the posterior edge than the anterior: it assists the posterior part of the retrahens in its action.

*d* A muscle which is a sort of antagonist to *c*; it arises from the ridge of the occiput under the retrahens, and is inserted into the ear at *d*: it helps to turn the opening of the ear forwards.

*f* The anterior cartilage of the outer ear.

*g* The outer ear.

*In the Neck.*

*abc* Sterno-mastoideus, or sterno-maxillaris, because it arises at *a* from the top of the sternum, and is inserted tendinous into the lower jaw-bone under the parotid gland, and by a continuation of the same flat tendon into the root of the processus mastoideus.

*dd* Caracohyoideus arises from the upper and internal side of the humerus, betwixt the insertions of the subscapularis and teres major by a flat membranous tendon, and is inserted into the os hyoides; it has a strong attachment to the anterior part of the levator humeri proprius, or rather the anterior part of the trapezius, by which it is confined in its proper place, being prevented forming a straight line when the neck is curved.

*ee* Longus colli.

*ff* Scaleri.

*gb* Inter-transversalis minor colli.

*iklm* Serratus-major anticus; *i* the part which arises from the transverse processes of the third and fourth vertebræ of the neck; *k* that from the fifth, *l* that from the sixth, *m* that from the seventh; it is inserted into the scapula. Betwixt these parts are marked arteries and nerves which go to the parts lying over them.

*nnoo* The jugular veins; at *oo* are valves.

*p* Glandulæ cervicales inferiores. See 5, in Plate II.

*In the Shoulders and Trunk.*

*abc* Serratus minor anticus arises from the sternum and part of the first rib, and from the

cartilaginous endings of the second, third, and fourth ribs near their joining to the sternum; it is inserted into the superior costa near the basis of the scapula and tendinous surface of the supra-spinatus; and is connected to the teres minor by fascia, which is sent from this muscle over the infra and supra-spinatus scapulæ to its outer edge. Its flat tendon may be separated, some part of the way, to the basis and spine of the scapula, from the tendinous surface of the supra-spinatus scapulæ.

*ddeeffggb* Pectoralis; *ddee* the superior part arising from the sternum at *dd*, which is, at *ee*, going to be inserted, by a flat membranous tendon, along with the levator humeri proprius into the humerus, together with or betwixt the biceps and brachialis internus; *ffgg* the part of this muscle which arises from the anterior part of the sternum at *ff*, thence running towards the muscles lying on the cubit, ceases to be fleshy about *gg*, and sends a membranous tendon or fascia down the muscles on the inside the cubit, which is joined by the membrana carnosæ; *b* the part which arises from the aponeurosis of the external oblique muscle of the abdomen, and is inserted into the head of the os humeri internally.

*ikklmn* Supra-spinatus scapulæ; *kk* its origin from the spine of the scapula; *l* its insertion into the head of the os humeri and capsular ligament on the inside of the biceps cubiti; *m* its insertion into the head of the os humeri and capsular ligament on the outside of the biceps cubiti.

*opq* Infra-spinatus scapulæ; *q* the tendon by which it is inserted into the protuberating part of the humerus.

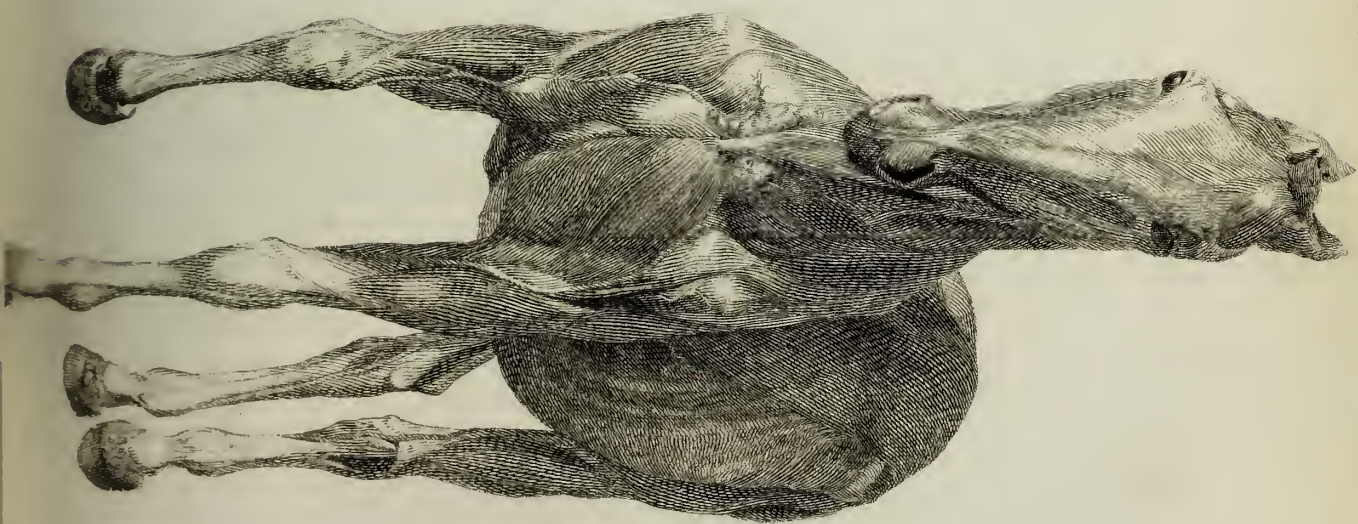
*r* Teres minor.

*ssttuw* Latissimus dorsi; *ss* the aponeurosis, or tendon of this muscle; *tt* the origin of its fleshy fibres; *u* a fleshy part of this muscle, which runs over the inferior angle of the scapula; *w* the fleshy part going to be inserted into the humerus.—The serratus major posticus protuberates a little under the aponeurosis of this muscle.

*x* Coraco-radialis.

*yz* Triceps brachii; *y* the head, called the extensor longus; *z* extensor brevis.

**I I I, &c. 2 2 2, &c. 3 3 4 4 5 6 6** Obliquus externus, or descendens abdomenis; its superior origin is from the fifth rib: about **I I I, &c.** it begins its origin from the ribs and intercostals, and continues it down to about **2 2 2, &c.** where it ceases to adhere to them; **4 4 4** the fleshy part which does not adhere to the ribs and intercostals; **3 3** mark the fleshy fibres arising







from the fascia lata; 5 the fleshy part of this muscle which lies over the abdomen; 66 part of its insertion into the spine of the ilium.—Upon this muscle are marked a great many small branches from the intercostal arteries which go to the membrana carnea and integuments.

77 Longissimus dorsi.

*In the upper Limbs.*

*a a b c d e f g h i* A fascia or strong membranous production, lying over the extending muscles which are upon the cubit; *a a* its origin from the two external protuberating parts of the humerus, from the levator humeri proprius, from the trapezius, and from the anterior edge of the triceps: it is expanded like a strong ligament betwixt the two protuberating parts of the humerus, and gives origin to some of the fleshy fibres of the extensor carpi radialis; it is inserted into the radius on each side of the extending muscles, and into the muscular ligaments on the carpus; it makes a continued case for the extending muscles from their originations down to the carpus, and confines them steady in their proper places; there lies protuberating under it, at *a b c d e f*, the extensor carpi radialis, of which *b c d* mark the fleshy part; *e f* the tendinous, which is inserted at *f* into the metacarpal bone; at *g* the muscle protuberates, which is analogous to the extensors of the thumb in the human body, and at *h i* the extensor digitorum communis of which *h* is the fleshy part; *i* the tendon.

*k l m* The tendon *i* inserted at *k* into the coffin bone; at *l m* into the great pastern or first bone of the finger.

*n n* Ligaments which confine the tendon of the extensor digitorum communis down to the great pastern, which is analogous to the first bone of the finger in the human subject; they are sent from the interosseus, &c.

*o p* An expansion which arises from the external articular ligament betwixt the humerus and cubit, and from the olecranon; it receives an addition from the longus minor, and then descends over the bending muscle to form the ligaments on the carpus to which it is attached, as well as to the bones of the cubit on each side of the bounds of the bending muscles; there lies protuberating under it at *o*, the flexor carpi radialis; and at *p* flexor carpi ulnaris.—It forms the ligament which binds down the tendons of the bending muscles on the carpus, and descends more than half way down the splint bones; then degenerates into a membrane, and joins the ligament which arises from the sesamoid bones.

*q r* Vena cephalica: it arises from under the hoof, and falls into the jugularis.

*s s* Vena plantaris.

*t* Nerves which go to the integuments.

*u* A ligament proper to the tendon of the extensor digitorum communis, inserted, at two protuberating parts of the radius, on each side the channel in which the tendon lies.

*w x y y* A ligament whose fibres run in a transverse direction over the anterior part of the carpus, to which the carnos membrane adheres at *w*, and the burfal ligament which lies under it about *x*: it seems to arise from the fascia which covers the bending muscles on the cubit, and the articular ligaments protuberating under it at *y y*.

*z z* The articular ligaments of the fetlock joint.

*3* A substance resembling the villous surface of a mushroom, arising from the coffin bone, received by the like substance arising from the hoof, which it mutually receives.

*In the lower Limbs.*

*a* Part of the gluteus externus.

*b b b c d* Gluteus medius; *b b b* its origin from the tendinous surface of the sacro-lumbalis; *c* its origin from the ilium.

*e f g h i k* Musculus fascia lata; *e* the posterior fleshy belly; *f* the fleshy part lying betwixt the two fleshy bellies; *g h i k* the broad tendon; at *g* it is covered by the fascia lata, which, in this place, is inseparably united with it, but ceases to adhere to it betwixt *g* and *h*, where it is cut off; at *i* the tendon of this muscle is inserted into the tibia; at *g h* the vastus externus protuberates; at *k* the patella; and betwixt *k* and *i* is the external anterior ligament which binds the patella to the tibia.

*l m n o p q r s s s t* Biceps cruris; *l m* the anterior fleshy part, which is inserted into the patella near *m*, and by a strong tendon *m n* into the tibia at *n*; the part *m* lies under the flat tendon of the middle part *o*, which joins the flat tendon of the musculus fascia lata; *o* the middle part of this muscle going to be inserted into the anterior and superior ridge of the tibia, and the tendon of the anterior part running from the patella to *i*; *p q r s s s t* the tendon of the posterior part of this muscle, which is inserted at *s s s* into the anterior ridge of the tibia, and under which protuberates, at *p*, the extensor longus.

*u u u u v w x z 1 2 2* The tendon of the extensor longus digitorum pedis, of which *p* is the fleshy belly; and *u u u u v w x* the tendon inserted at *u* into the coffin bone, and at *w v* into the great pastern the first bone of the toe; *x* the place where the fasciæ are cut off which join in with this tendon; at *q* the tibialis anticus protuberates under the tendon of the biceps cruris, of which *q* is the fleshy part, and *z 1* the



tendons protuberating under the ligaments; at *r* the peroneus protuberates, of which *r* is the fleshy part, and 22 the tendon which joins in with the long extensor of the foot.

3 Extensor brevis digitorum pedis arises tendinous from the upper part of the anterior protuberance that stands forwards from the calcaneum, and soon becoming fleshy is inserted fleshy and tendinous into the tendon of the long extensor digitorum pedis a little above that tendon's being joined by the peroneus.

4 A ligament common to the extensor longus digitorum pedis and tibialis anticus; it receives a little of the insertion of the biceps cruris into its superior edge internally; the part 4 is the strongest part of it: it arises from the tibia close to the insertion of the flat tendon of the biceps with which it is united: its fibres run obliquely downwards and outwards from the internal edge of the tibia to the external.

5 A ligament proper to the extensor longus digitorum pedis protuberating under the membranous ligament.

6 A ligament common to the extensor longus digitorum pedis with the tendon of the peroneus: it arises from the bones of the tarsus and splint bone, and is inserted into the anterior and superior part of the metatarsal bone, and running membranous over the ligament 5 joins the ligament 4; its tendinous fibres run chiefly transverse, but some scattered irregular tendinous stripes from about 7 run obliquely downwards and inwards: there is an expansion running to this from the fascia which covers the flexor digitorum over the peroneus which completes a case for that muscle.

7 A ligament which binds down the tendon of the peroneus; it runs from the tibia to the os calcis: it is marked 3 4 in Plate II.

8 8 A sort of ligamentous fascia, betwixt which and the burfal ligament the mucilaginous glands are contained: it is attached above to the ligament 4, and below, to the ligament 6; on the inside to the articular ligament.

9 10 10 Interosseus, &c.—it is like a strong ligament arising from the upper part of the metatarsal bones and some of the tarsal bones, and is inserted into the sesamoid bones and first bone of the toe on each side, and sends off the ligaments 10 10 to the tendon of the extensor longus digitorum pedis.

11 The tendon of the flexor digitorum pedis.

12 12 The tendon of the plantaris.

13 13 Vena saphæna.

14 Vena plantaris externa.

15 Vena plantaris interna, or continuation of the vena saphæna.

16 The vena plantaris arising from under the hoof.

17 The tendon of the gemellus, or tendo Achilles, inserting itself into the os calcis, covered by the fasciæ which are inserted into the os calcis.

18 Tibialis posticus.

19 A substance resembling the villous surface of a mushroom, arising from the coffin bone, received by the like substance arising from the hoof, which it mutually adheres to.

#### *Description of Plate XIV.*

##### *Muscles, &c. in the Head.*

*a* The anterior dilator of the nostril; the superior part is inserted into the superior edge of the alæ nasi, the middle part *a* into the cartilage, and the lower part into the anterior edge of the nostril below the anterior lateral cartilage, and above the posterior and inferior lateral cartilage.

*bc* D A muscle which arises by a small tendon along with the long nasal muscles of the upper lip, and from the musculus canini, or is attached to it by a membranous tendon which runs over the nerves 1 1 2 3: it is inserted into the wing of the nostril, but chiefly into the concha narium, or pituitary membrane which incloses the concha narium inferior; *b* its origin; *c* the fleshy part which goes to be inserted into the concha narium; at D those few fibres are cut away which were inserted into the wing of the nose; it is inserted into the alæ nasi fleshy all the length of its inferior edge.

*dd* Orbicularis oris.

*e* Canini, the elevators of the corners of the mouth.

*f* The masseter.

*gg b* The temporal muscle; *gg* its origin; *b* its insertion into the coronary process of the under jaw bone.

*i* Part of the membrana pituitaris. See *x*, Plate XII.

K The alæ narium.

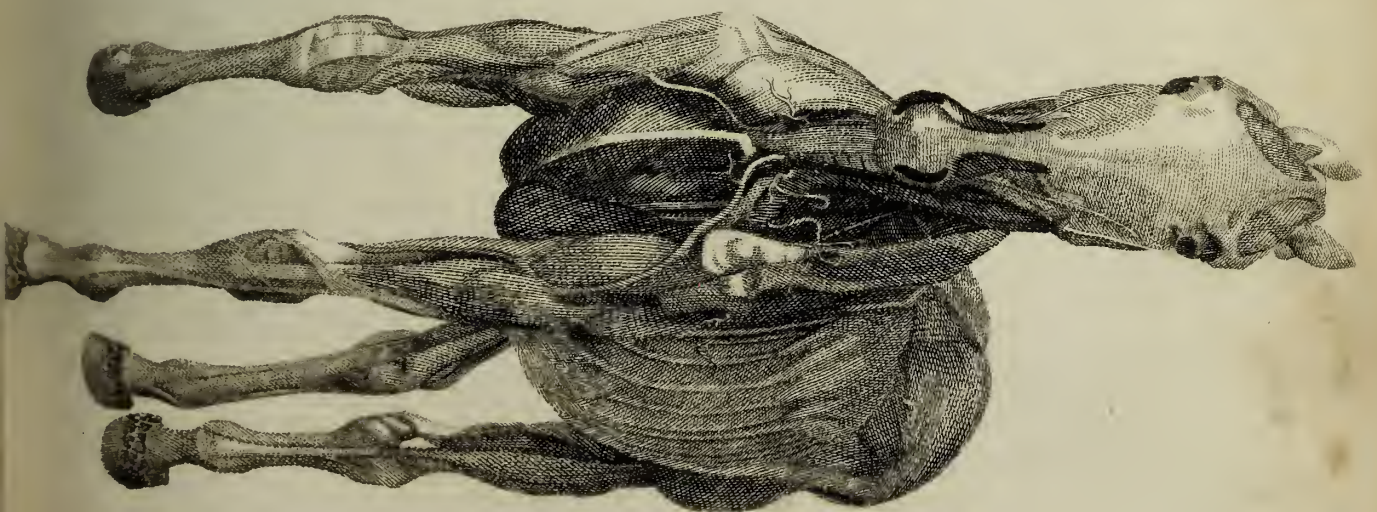
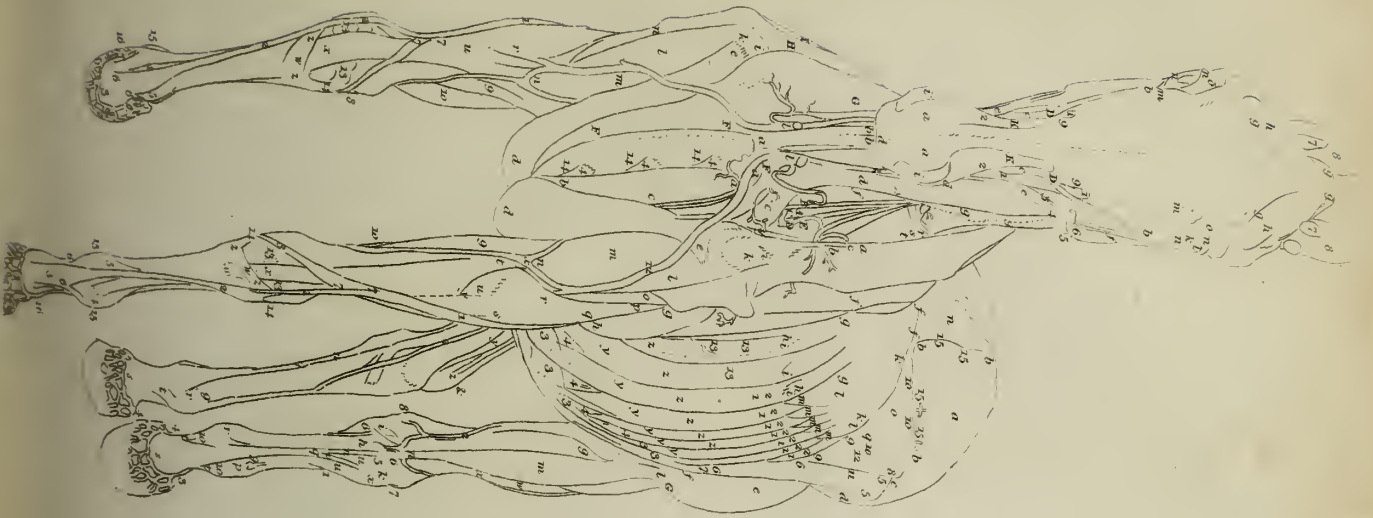
*kl* The eye-ball, *k* the pupil, *l* the iris.

*mnn* Musculus ciliaris; *m* its origin.

*o* The elevator of the eye-lid, so thin and transparent that the white part of the eye is seen through it, and the tunica adnata, or conjunctiva, which lies under it, as well as the tendon of the straight muscles of the eye.

1 1 2 9 Nervus maxillaris superior, the second branch of the fifth pair of nerves; 1 1 branches going to the upper lip; 2 a branch going to the inside of the nostril towards the tip of the nose; 9 a branch which goes to the long nasal muscle of the upper lip.

3 Branches of the nervus maxillaris inferior; they are branches of the third branch of the







fifth pair of nerves; and accompanied with an artery from the temporal artery which communicates with the arteria angularis; the nerve also communicates with the nervus maxillaris superior.

- 4 Arteria angularis.
- 5 Vena angularis.
- 6 The salivary duct.
- 7 The anterior cartilage of the outer ear.
- 8 The outer ear,

*In the Neck.*

*a b* Sterno-thyroideus; *a* its origin from the sternum internally; its insertion is into the thyroid cartilage.

*c d* Caracohyoideus; *c* the flat membranous tendon coming from its origin from the upper and internal side of the humerus, betwixt the insertions of the subscapularis and teres major: it is inserted into the os hyoides: *d* the fleshy part; it is attached to the anterior part of the trapezius, which prevents its starting into a right line when the neck is curved; it has an attachment to the rectus anticus major, or an origin by a flat tendon along with its insertion from the os sphenoides.

*f* Scalenus: it arises from the transverse processes of the fifth, sixth, and seventh vertebræ of the neck, and is inserted into the first rib.

*g g* The inferior part of the transversalis cervicis: it arises from the transverse processes of eight of the superior vertebræ of the back, and from the fascia betwixt that and the broad tendon of the complexus, &c. by fleshy fibres: it is inserted into the transverse processes of the four inferior vertebræ of the neck partly fleshy, but chiefly by broad thin tendons, as *g g*.

*h* The superior part of the transversalis cervicis, which arises from the third, fourth, fifth, sixth, and seventh, processes of the neck, and the two uppermost of the back, viz. beginning at the lower oblique process of the third and at the uppermost of the fourth, and so of the rest. It is inserted into the transverse process of the first vertebra.

*i* Part of the trachelo-mastoidæus, complexus minor, or mastoidæus lateralis, which arises from the oblique processes of the third, fourth, fifth, sixth, and seventh, vertebræ of the neck, and the uppermost of the back, and transverse processes of the second and third vertebræ of the back. It is inserted tendinous into the root of the processus mastoidæus.

*k* Arteria carotis.

*l* Part of the jugular vein.

*In the Trunk.*

*a a b c* Musculus in summo thorace situs, arises at *a a* from the first rib, and is inserted into the sternum about the root of the cartilage of the fourth rib; at *b* the edge *c* joins in with the rectus abdominis of which this muscle seems to be a continuation.

*f f g g h h i i i* Serratus minor posticus; *f f g g* the broad tendon by which it arises, cut off at *f f* to shew the gluteus medius; *g g h h* the fleshy part, beginning at *g g*; *i i i* the flat tendons by which it is inserted into the ribs: its first insertion is into the fifth rib. In some subjects this muscle runs fleshy under the serratus major posticus, and is inserted into the ribs from the fifth to the fourteenth.

*F F G* The serratus minor anticus arising from the sternum and cartilages of the four superior ribs at *F F*.

*k k l l m m*, &c. Serratus major posticus; *k k l l* its broad tendon, cut from the tendon of the latissimus dorsi at *k k*; *l l m m*, &c. the fleshy part, inserted into the ribs at *m m*, &c. it is, in some subjects, inserted into eight inferior ribs, in others only into seven.

*H* Supra-spinatus scapulæ.

*I* Infra-spinatus scapulæ.

*n o p* Longissimus dorsi; *n* the strong thick part of its tendinous surface, through which the fleshy fibres make some appearance; *p* its superior tendon, inserted into the transverse process of the seventh vertebra of the neck.

*q r s t* Sacro lumbalis; *q* the part arising by a small tendon along with the longissimus dorsi; *r* its uppermost insertion into the transverse process of the seventh vertebra of the neck; *s* its insertion into the first rib; *t* that into the second.

*y y*, &c. *z z*, &c. *1 1*, &c. *2 2* &c. The external intercostals; *y y*, &c. *z z*, &c. the anterior part over which the external oblique muscle of the abdomen runs without adhering; *z z*, &c. *1 1*, &c. the part to which the external oblique muscle adheres, which is about as extensive as its origin from the ribs; *2 2*, &c. the parts which lie above the adhesion of the oblique muscle of the abdomen.

*3 3*, &c. Fleshy fibres which arise partly externally, tendinous, but chiefly fleshy, and run in a transverse direction from one rib to another.

*4 4*, &c. Parts of the internal intercostals.

*5 5 6 6 7* Obliquus internus, or ascendens abdominis; *5 5* its origin from the spine of the ilium, tendinous, and fleshy: its origin is continued to the ligamentum Fallopii; it is also continued from the same ligament and symphysis of the os pubis: *6 6* its insertion into the car-



tilage of the lowest rib partly tendinous: it is likewise inserted into the cartilaginous endings of the ribs as far as the cartilago ensiformis.

8 9 9 Some appearance of the transversalis abdominis.

10 10, &c. Some branches of the nervi lumbares.

11 A branch of the external branch of the outer iliac artery, accompanied by 12.

12 A branch of the external branch of the outer iliac vein.

13 13, &c. Branches of the arteriæ intercostales inferiores.

14 14, &c. Branches of the arteriæ intercostales superiores.

15 15, &c. Branches of the anterior lumbares.

*In the Shoulders and upper Limbs.*

A Nervus musculo-cutaneus.

B Nervus medianus.

C Nervus cubitalis.

D Nervus radialis.

E Nervus axillaris.

F Vena axillaris.

*abc* Subscapularis, which is outwardly tendinous; *a* marks the place where the membranous tendon is cut off, by which the supraspinatus receives some origin from the surface of this muscle; *b* marks a tendinous slip sent from this muscle, which leaves it about *c*, and is inserted into the processus coracoides: it serves to guard some nerves which pass under it.

*de* The internal part of the pectoralis, coming at *d* from its origin from the aponeurosis of the external oblique muscle of the abdomen; *e* its insertion into the head of the os humeri.

*fgb* Triceps brachii; *f* the head called extensor longus, arising from the inferior costa of the scapula; *g* the head called extensor brevis, arising from the humerus and expansion which covers the extending muscles on the cubit; *b* the part going to be inserted into the ancon.

*iklmn* Biceps brachii; or rather coraco-radialis; *i* its origin from the processus coracoides scapulæ; *k* a fleshy part lying upon the tendon; *l* the external belly; *m* the internal belly; *n* the aponeurosis arising from this muscle which it sends to the tendinous fascia, or covering of the cubit, and tendon of the extensor carpi radialis.

*o* Part of the brachialis internus: it arises from the neck of the humerus and internal lower part of the scapula; and is inserted into the radius a little below the insertion of the coraco-radialis, but more internally.

*pqrstuvwxy* Extensor carpi radialis; *p* its origin from the superior external protuberating part of the humerus; *q* some of the part which

arises fleshy from the fascia which is extended betwixt the two external protuberating parts of the os humeri: it arises above the part *q*, and ligament or fascia from the external ridge of the external condyle all the way up as far as the brachialis internus does not cover: but its most considerable origin is from the anterior part of the external condyle of the humerus; from which place it continues its origin into the great cavity on the anterior and inferior part of that bone, from whence it arises by a very strong tendon firmly adhering to the tendon of the extensor digitorum communis—The origin of this muscle is as extensive as the originations of the long supinator, radialis longus, and brevis, in the human body: it appears to be a combination of all the three; it is assisted by the biceps, the fascia of which is like a strong flat tendon inserted into this muscle; *rst* the fleshy part; *uxw* the tendon inserted into the metacarpal bone at *w*; about *x* it adheres to the burfal ligament; *y* marks the place where the fascia, proper to the extending muscles on the cubit, is cut off from the fascia in the biceps muscle, *ny* which it joins, to be inserted, along with it, into the tendon of the extensor carpi radialis.

*zz* A ligamentous fascia.

1 2 2 3 4 5 6 6 Extensor digitorum communis; 1 the fleshy belly which arises from the external condyle of the humerus, the upper and lateral part of the radius and fascia which covers the extending muscles on the cubit; but its principal origin is by a strong flat tendon from the anterior part of the external condyle of the humerus; from which place it continues its origin into the great cavity, on the anterior and inferior part of that bone called its anterior fossula above its articulation with the radius; it lies under the extensor carpi radialis, to the tendon of which it adheres for about three minutes from its beginning, as well as to the burfal ligament which lies under it: 2 2 3 4 5 6 6 the tendon; 3 the part which is inserted into the coffin bone; 4 the insertion of a slip of this tendon, along with the tendon of the extensor minimi digiti, into the great pastern, externally; 5 the insertion of a slip of this tendon into the great pastern internally; 6 6 the insertions of the ligaments into this tendon, which bind it down to the great pastern.

7 7 8 The muscle which is analogous to the extensors of the thumb in the human body; 7 7 the fleshy part arising from the lateral part and ridge of the radius; 8 the tendon going to be inserted into the internal splint: it is a combination of the abductor pollicis manus, extensor longus and brevis, pollicis manus, and indicator.

9 Flexor carpi radialis, arises from the inner condyle of the humerus, and is inserted into the inner splint bone.

10 Flexor carpi ulnaris internus; that part of it which arises from the internal protuberance of the humerus.

12 Vena cephalica; it arises from under the hoof (where it is called vena plantaris) and falls into the jugularis.

13 13 The burfal ligament, belonging to the anterior part of this joint.

14 14 The articular ligaments of the carpus.

15 15 The articular ligaments of the fetlock joint.

16 Vena plantaris.

*In the lower Limbs.*

*abbbcd* Gluteus medius; *bbb* its origin from the tendinous surface of the sacro-lumbalis; *c* its origin from the ilium; near *d* it is inserted into the great trochanter of the thigh bone.

*efG* Vastus externus; *e* its principal fleshy part, inserted at *f* into the patella; *G* the thin fleshy part, inserted into the external lateral ligament of the patella.

*ghik* Tibialis anticus; *g* its origin from the superior and anterior part of the tibia; it arises also by a very strong tendon from the inferior part of the os femoris, into which the fleshy part, arising from the tibia about *g*, is inserted, having first run down about one third of the length of the tibia; after which insertion fleshy fibres arise from this tendon and run obliquely downwards and inwards: the internal surface of this muscle, which is externally tendinous and arises from the tibia, sends off fleshy fibres obliquely downwards and outwards, which form a belly about twice as thick as those from the external tendon, which they meet, and with it form the tendon *h*, which is inserted into the superior and anterior edge of the metatarsal bone, and into the ossa cuneiforma: the external tendinous surface of this muscle, which arises from the os femoris, divides about the bottom of the tibia into two parts *i* and *k*, which serve as ligaments to keep the tendon *h* from starting from the tibia when this joint is bent: the part *i* is inserted into the lesser cuneiform bones of the tarsus, posteriorly running over the internal articular ligament as far back as the posterior edge of the splint bone; and the part, *k* is inserted into the os cuboides: it divides for the passage of some vessels, and then unites again.

*lmnopqrstt* Extensor longus digitorum pedis; *l* its origin from the os femoris along with the strong tendon of the tibialis anticus,

to which it is inseparably joined near its origin: it arises also from the tibia: *m* its fleshy belly; *nn* its tendon, joined at *o* by the tendon of the peroneus; with part of which it sends off a slip to be inserted into the first bone of the toe, or great pastern at *p*; at *q* it is joined by the fasciæ, which are here cut off, and sends with them a slip which is inserted into the great pastern at *r*; *s* the principal part of the tendon going to be inserted into the coffin bone; *tt* the insertions of the ligaments into this tendon, which bind it down to the great pastern.

*uu* Extensor brevis digitorum pedis.

*wxx* Peroneus; it arises from the external articular ligament, which runs from the external condyle of the femoris down the fibula, and from the fascia or tendinous covering of the flexor digitorum pedis; *w* its fleshy belly; *xx* its tendon, which joins in at *o* with the tendon of the extensor longus digitorum pedis.

*y* Tibialis posticus, arises from the external side of the posterior part of the head of the tibia, and from the tendinous surface of the flexor digitorum pedis; the tendon of which muscle it joins in with, after running through a groove on the internal side of the heel.

*z* The tendon of the gemellus.

♂ The tendon of the plantaris.

1 Arteria tibialis anterior.

2 Vena saphæna.

3 Vena plantaris externa.

4 Vena plantaris interna.

5 A ligament proper to the extensor longus digitorum pedis.

66 A burfal ligament.

78 Articular ligaments.

9 The interosseus, &c.—it is like a strong ligament arising from some of the tarsal bones, and the upper part of the metatarsal bones; and is inserted into the sesamoid bones of the fetlock joint, and upper parts of the great pastern on each side, and sends off the ligaments 10 10 to the tendon of the extensor longus digitorum.

*Description of Plate XV.*

*Muscles, &c. in the Head.*

*a* The anterior dilator of the nostril.

*ef* The short nasal muscle of the upper lip.

*gg* The orbicular muscle of the mouth.

*hhhiik* Caninus, or the elevator of the corner of the mouth; *hhh* its origin from the upper jaw bone; *ii* its insertion into the buccinator; *ik* its insertion into the orbicularis oris.

*llm* Part of the buccinator; it arises from three different places: the superior fibres arise from the alveoli of the upper jaw; the middle



fibres from the ligamentum inter-maxillaris, and the inferior ones from the lower jaw : it is inserted into the glandulous membrane of the inside of the cheek and lips ; and at *m* into the orbicularis oris.

*n o p* The globe, bulb, or ball of the eye ; *n* the pupil ; *o* the iris ; *p* the white of the eye, or tunica sclerotica, covered with the albuginea, and tendons of the streight muscles only.

*q* One of the lachrymal glands placed in the great canthus of the eye, called caruncula lachrymalis, and glandula lachrymalis inferior.

*r* The semi-lunar fold, formed by the conjunctiva.

*s* Attollens ; it arises from the bottom of the orbit near the foramen opticum, from the elongation of the dura mater by a short narrow tendon, and is inserted into the tunica sclerotica forming the albuginea.

*t* Deprimens ; it arises and is inserted as the attollens, only the attollens is on the superior, and the deprimens on the inferior, part of the globe.

*u* Adducens ; it has its origin betwixt the attollens and deprimens, and is inserted betwixt them, lying on the internal side of the globe : its tendon is joined by the attollens above, and deprimens below ; and on the external side of the globe, those two muscles are joined in like manner before they reach the cornea, by the abducens ; the tendinous expansions of these four streight muscles altogether are inserted into the tunica sclerotica near the edge of the cornea lucida.

*w* Obliquus inferior.

*x y z* Nervi maxillares superiores ; they are branches of the third branch of the fifth pair of nerves ; *x* branches which go to the upper lip ; *y* a branch which goes to the inside of the nostril towards the tip of the nose ; *z* a branch which goes to the long nasal muscle of the upper lip.

1 Arteria angularis.

2 Vena angularis.

3 The anterior cartilage of the outer ear.

4 The outer ear.

#### *In the Neck.*

*a b* Sterno-thyroideus, arising at *a* from the superior and internal part of the sternum fleshy, it becomes tendinous in about half its ascent up the wind-pipe, from which tendon the sternohyoideus arises ; it soon becomes fleshy again, and is inserted into the thyroid cartilage.

*c* Trachea arteria, asperia arteria, or wind-pipe.

*defg b* Longus colli ; *d* the part which comes

from its inferior origin, which is from the lateral parts of the bodies of the five uppermost vertebræ of the back and the lowest of the neck, and from the transverse processes of the sixth, fifth, fourth, and third, vertebræ of the neck ; it is inserted at *g* into the anterior oblique process of the sixth vertebra of the neck, and into the bodies of the fifth, fourth, third, and second, laterally, near the transverse processes, and into the anterior eminence or tubercle of the body of the first vertebra of the neck.

*i i k k* Inter-transversarii posteriores colli ; they arise from the roots of the oblique processes, and betwixt them and the transverse processes ; also from the posterior part of the transverse processes of the four inferior vertebræ of the neck, and the uppermost of the back : they are inserted into all the transverse processes of the neck, except the first and last, though the obliquus capitis inferior seems to be a muscle of the same kind.

*m* Nerves coming from betwixt the sixth and seventh vertebræ of the neck, betwixt that and the first of the back, and betwixt the first and second of the back : they form the brachial nerves.

*n* Arteria carotis.

*o* Part of the vena jugularis.

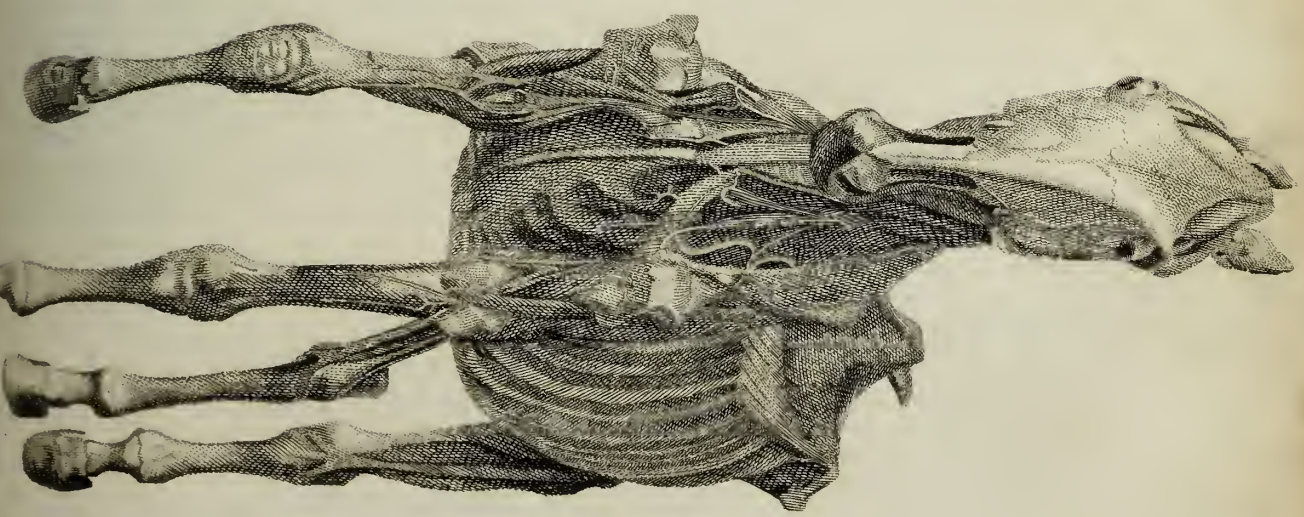
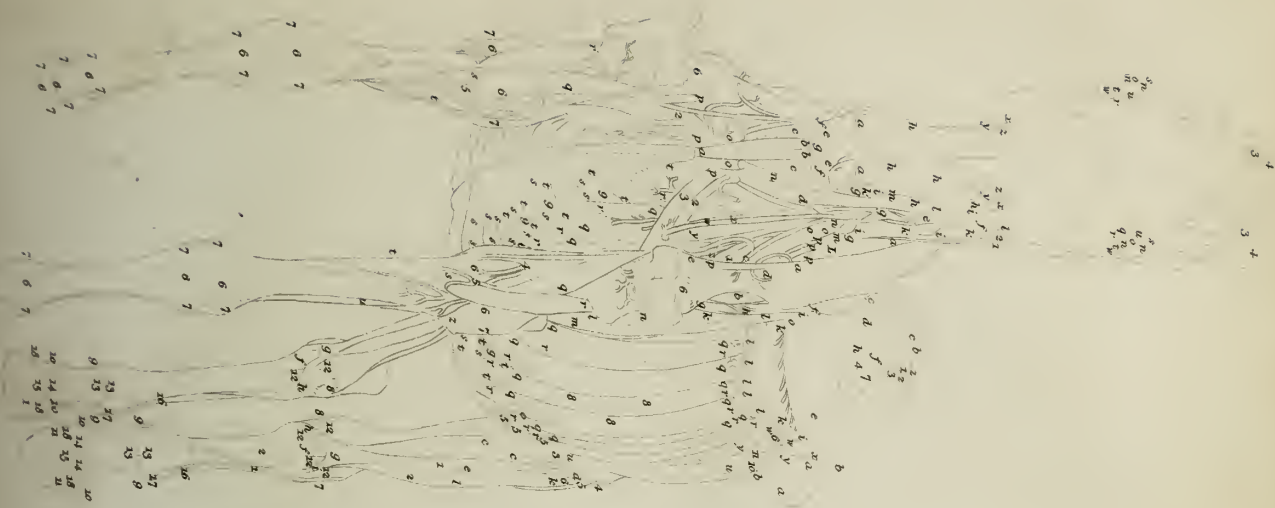
*p* Part of the vena cephalica, where it falls into the jugularis.

#### *In the Trunk.*

*a* Semi-spinalis dorsi, arises fleshy from the tendinous surface of the longissimus dorsi : it is inserted into the spines of the ten superior vertebræ of the back ; and communicates with the spinalis cervicis as well as the fleshy fibres of the spinalis dorsi, before its insertion into the superior parts of the spines, the spinalis dorsi being inserted below it.

*b b c c d e f g b* Longissimus dorsi ; it arises at *b b* from the posterior spine of the ilium, and at *c c* by a strong aponeurosis from the three uppermost spinal processes of the os sacrum, from all those of the loins and seven or eight of the back ; this aponeurosis, or tendinous surface, is very strong near the spines as at *d*, but diminishes in thickness so as to shew the carnosus fibres through at *e* : it arises also fleshy from the inside of the ligament which binds the posterior part of the ilium to the transverse processes of the os sacrum, and from all the anterior side of the ilium which is behind the transverse processes of the os sacrum, and is inserted into the whole length of the inferior edges of the transverse processes of all the vertebræ of the loins, into the inferior or lower convex edges of about seven of the inferior ribs, betwixt their articula-

# Muscles of the Horse.







tions and the sacro-lumbalis; the insertion into the lowest is about nine minutes broad, the insertions into those above diminish gradually in breadth till they come to the seventh or eighth, where they end in a point: the sacro-lumbalis in those above lying close up to the transverse processes of the vertebræ of the back. It is inserted, by distinct tendons, into all the transverse processes of all the vertebræ of the back, and ligaments of the true ribs, and at *g* into the transverse process of the seventh vertebra of the neck; *bbfb* shew the carnosus origin of the gluteus medius from the tendinous surface of this muscle.

*ikklllllll* L Sacro-lumbalis; *i* the part which, in this subject, arises from or along with the longissimus dorsi; it receives origins from the superior edges of all the ribs, except two or three of the uppermost, by flat tendons about half the breadth of the muscle, and is inserted, by distinct flat tendons, into the lower convex edges of all the ribs except two or three of the lowest, as at *lllllll*, and into the transverse process of the seventh vertebra of the neck at *L*: each of these tendons runs upon the surface of the muscle, going over about three ribs below its insertion.

*noopp* Levatores costarum; *noo* that which arises at *n* from the transverse process of the seventh vertebra of the neck, being inserted into the first rib at *oo*; it is sometimes called one of the scaleni: *ppp* those which arise from the transverse processes of the back, and the neighbouring ligaments, each being inserted into the back part of the outside of the rib below its origin.

*qqrr*, &c. The external intercostals; they arise at *qq* from the inferior edge, and a little of the outside of each rib, the last excepted, are a little tendinous, and, descending obliquely downwards, are inserted at *rr* into the upper edge and from a small portion of the outside of each rib, the first excepted.

*ssst* &c. The internal intercostals, they arise at *ss* from the superior edge only of the bony part of each rib, except the first, not covering any of the outside, and from the edges of the cartilages of the ribs, and a considerable part of the outside of the cartilages: they are, chiefly externally, tendinous, but partly fleshy, and ascending obliquely upwards, and forwards, are inserted into the lower edges of the bony parts of the ribs, and into the edges and part of the outsides of their cartilages, the last excepted.

*uuwwxy* Transversalis abdominis; the part *uu* arises from the inside of the ribs below the triangularis of the sternum and diaphragm

by fleshy digitations; the part *ww* arises tendinous from the transverse processes of the three or four uppermost vertebræ of the loins, by an aponeurosis, or tendinous plain, and fleshy from the internal labium of the crista of the ilium, and a great part of the ligamentum Fallopii, or tendinous margin of the internal obliquus of the abdomen, and is inserted into the ensiform cartilage, and linea alba, adhering to the posterior plate of the aponeurosis of the internal oblique muscle of the abdomen at its first passing under the rectus. The lower part of the aponeurosis of the transversalis is separated from the upper in a transverse direction, from the edge of the rectus to the linea alba, about half way betwixt the navel and symphysis of the pubis, the upper part going behind the rectus, and the lower before it and the pyramidalis, if there is any; at *x*, from the spine of the ilium, arises an aponeurosis common to this muscle, with the lower posterior serratus and internal obliquus, cut off at *xi*, where it joins the serratus, and *yy* where it joins the internal obliquus.

*z* The elevating muscle of the tail.

1 The lateral muscle of the tail.

2 2 The inter-transversal muscles of the tail.

3 The depressing muscle of the tail.

The origins and insertions of the muscles of the tail are shewn in Plate XVII.

4 Branches of the nervi lumbares, coming out of the sacro lumbaris, which run under the gluteus medius to go to the integuments.

5 5, &c. Branches of the nervi costales, lying upon the transversales, which go to the abdominal muscles and integuments.

6 Branches of the nervi lumbares which go to the abdominal muscles and integuments.

7 Small arteries coming out of the sacro-lumbalis to go to the gluteus medius.

8 8 Arteries from the intercostales inferiores.

9 9, &c. Branches of the arteriæ intercostales superiores.

10 The external branch of the outer iliac artery in two ramifications, accompanied by 11.

11 The external branch of the outer iliac vein, in two ramifications.

*In the Shoulders and upper Limbs.*

*abcde* Sub-scapularis; it arises from all that space of the inner or concave side of the scapula, betwixt the insertion of the serratus major anticus and near its neck, and from this situation it has its name: it is thick and made up of several penniform portions; *a* the part above the superior costa of the scapula, where there is yet remaining a part of the flat tendon by which the supra-spinatus receives some origin



his fore bowels, and so all over very well, from the knees and cambrell-houghs upwards: after that, go to the far side, and do in like manner. Then take a dead horse's tail, or a dusting-cloth of cotton, and strike that dust away which the curry-comb hath raised. Then take a round brush, made of bristles, and dress him all over, both head, body, and legs, to the very fetlocks, always cleansing the brush from that dust which it gathereth, by rubbing it upon the curry-comb.

"After that, take a hair-cloth, and rub him again all over very hard, both to take away the loose hairs, and to help to lay his coat; then wash your hands in fair water, and rub him all over with wet hands, as well head as body; for that will cleanse away all those hairs and dust the hair-cloth left. Lastly, take a clean cloth, and rub him all over till he be very dry, for that will make his coat smooth and clean. Then take another hair-cloth (for you should have two, one for his body and another for his legs), and rub all his legs exceeding well from the knees and cambrell-houghs downwards to his very hoof, picking and dressing them very carefully about the fetlocks from gravel and dust, which will lie in the bending of his joints."

"Without regular grooming," says Mr. Lawrence, "it is vain to expect a horse will exhibit himself in his most beautiful colours, or be capable of his utmost exertions; in a word, that he will be in *high condition*."

"Care should be taken (by the master, I mean) that the curry-comb be not too sharp, or, at least, not used in a rude and severe manner, so as to be an object of torture and dread, instead of delight and gratification to the horse. It is too often the fate of thin-skinned horses to suffer much from the brutality of heavy-handed and ignorant fellows, who punish with hard blows every motion the irritated animal is necessitated to make, looking upon him as a mere machine, which is destined to undergo all kinds of inflictions, and thinking it an act of bravery, and a kind of point of honour, to exact absolute submission, possible or not, by the most prompt and rigorous punishment. But these are either persons entirely ignorant of horses, or ordinary stable fellows: a good groom acquires patience and circumspection from their necessity, which experience has taught him; he handles his stable-tools with a tenderness, dexterity, and adroitness, which nothing but the best lessons and much practice will teach; his horses are perfectly clean in every part, fed with regularity and cleanliness; he knows to exercise them with temperance and safety, and has a skilful hand to

preserve them from a fall. A raw lad, or half-groom, will make a horse's back shine, and suffer the dirt to remain in all the hidden parts; will either gorge him with meat, or repeatedly neglect him; and, whenever he takes him out to exercise, will be sure to do him more harm, by worrying him about (which he probably thinks a gallant thing), than a day's journey would do, and, if possible, break his knees before he returns. A gentleman, himself inexperienced in horses, but wishing to keep them in good style, must have a groom who has served in stables of repute; or, if he desire to make a groom, he must send his servant where he can see good practice, or he will but deceive himself."

"The care of the *legs* and *feet* forms a most important branch of stable discipline. The *legs* must be kept perfectly dry, and so clean that not a speck of dirt be suffered to lodge in any crevice under the knee or fetlock, or around the coronet, and withal preserved cool and free from stiffness and inflammation. Dirt suffered to form a lodgment, or wet remaining upon the legs in cold weather, will fret the skin, and cause cracked heels, mallenders and fallenders, rats-tails, crown-scab, and such a train of stable plagues, as may baffle the most vigorous efforts during a whole winter. From want of care, the best flat-legged horses, whatever may be their condition, will soon become greased; but I have seen round fleshy-legged cattle, which could never be preserved from it by the utmost care of the most expert grooms, and which absolutely could not be kept in the house at all with whole legs."

Care, he says, should be taken not to irritate and add to the inflammation of the legs, by harsh, too long continued, or improper rubbing; and if they be tightly bandaged with linen or woollen, which every groom knows how to perform neatly, it will contribute to cleanliness and the general end. Some gallopers are apt to crack the skin of their heels in exercise: in that case he advises to supple the skin occasionally with simple ointment, though, in general, warm water will be a sufficient preservative. Pains and soreness in the shins and shank-bones are often the consequence of exercise over hard ground in very dry seasons, for which there is no better palliative than frequent warm emollient fomentations.

"With a thorough groom, the *feet* of his horse are objects of constant careful inspection: these should be well cleansed beneath the shoe with the picker from all small stones or gravel, at every return from abroad. The shoes must be examined, that their ends do not press into

the crust, and that the nails be fast; otherwise instant application must be made to the farrier. Horses ought by no means to remain in old shoes until the toe is worn away, or the webs become so thin that there is a danger of their breaking, unless in case of brittle hoofs, when it is an object to shoe as seldom as possible. Upon the average, good shoes will wear near a month. Steeling the toes is, in general, an useful practice, but less necessary when the best iron is made use of." The use of the artificial frog is also material. See FROG.

Both Mr. Clarke and Mr. St. Bel have asserted, that oils and greasy applications have really the effect to harden the hoofs of horses. To this opinion Mr. Lawrence also inclines; and, for that reason, would banish the oil-bottle and brush, so frequently and indiscriminately resorted to by grooms, from the stable. Some hoofs, however, require to be *hardened*, and the use of oil, as a *remedy* at least, may be advisable. Mr. Lawrence's objections also extend to the practice of stopping the feet of horses with dung, and various other compositions, which are also reprobated by Mr. Clarke, in his work published about the year 1782.

"I have taken horses frequently," says Mr. Lawrence, "with feet rendered as hard as oak, and nearly foundered, by the heat and greasing discipline of the livery-stables, and very shortly put them into a state of gradual amendment, by well soaking their hoofs three times a-day with warm water. For the naturally soft hoof, I know of no other remedy than cold spring water, or chamber-lye, and perhaps an occasional stopping with blue clay, having never found permanent benefit from the use of any restraining medicaments.

"It is beneficial, in general, to take off the shoes of a horse which is necessitated to stand long in the stable, and does no work; the growth of the crust and the enlargement of the heels is thereby promoted."

A part of the duty of a groom is the care of the *furniture* and *trappings*. Mr. Lawrence says, they are best kept in order by being instantly rubbed clean after use, and placed in a dry situation; by which method, neither oil nor scour-paper is often found necessary. He notices a great defect among grooms, even such, he says, as set up for professors. "They take no care to dry the pads of a saddle after a journey, but, confining their attention merely to externals, never scruple to put a hardened and damp saddle upon a horse's back: it is the same with regard to body-clothes, which, whether they be soaked through with sweat or rain, or damps, are in-

considerately girted round the body of a horse, sick or well, in the precise state in which they chance to be picked up. Here we have, I doubt not, one of those latent causes of colds, '*caught*,' as the grooms say, '*the devil knows how*.' The pads of saddles ought to be kept perfectly soft, and free of dirt and sweat; and, after use, should be dried either in the sun or by the fire, and hung in a dry place: the clothes also ought to be washed much oftener than they generally are, and ever kept perfectly dry.

"The ordinary periods of feeding with corn, in this country, are morning, noon, and night; the quantities each time either a quarter or half a peck, with or without about two handfuls of beans, according to the horse's state of body. Much greater care than is common, ought to be had to sifting the oats clean from dust, and the dung of mice. Water should be allowed without fail twice a-day. I have often heard of the hay and water system of certain economical stables, calculated to furnish the horse with a carcass, and save the expence of corn; but there is also an error not unfrequent among stable people, who suppose water to be at best but a kind of necessary evil to horses, and therefore think it a point gained, whenever they can find an opportunity to abridge the quantity. They find warrant for this practice in some of the old authors; but how well soever a horse may shift with little or no water whilst abroad and feeding upon succulent meat, it is indispensable to him in the stable, and oftentimes much mischief ensues from its being withheld."

There exist two disputed cases in stable economy, to which it is necessary to advert; Mr. Lawrence, however, thinks them by no means difficult of solution: the gallop after water, and the ratio of feeding horses which labour but little or occasionally. Of the first he says, "It is remarkable that our early English writers condemn the gallop after water, and call it a French custom; whilst Solleyfel, and the French writers of the last century, equally decry it, but insist on its being an English one. It is undoubtedly in opposition to sound theory, and, for that reason alone, ought to be discontinued; at the same time I must acknowledge, I never observed any ill effects to arise from the practice. In the waterings of race-horses, it must needs be more innocent than elsewhere, seeing they take a moderate number of go-downs of water, and walk for some distance previous to their sedate and steady canter; unless indeed they water immediately before a brushing gallop: that may be attended with painful sensations,



and certainly with no benefit to the horse. But I have seen a training groom take his hack from the watering trough, and ride it up and down as if he would burst it, under the stupid notion of *warming the water in its belly*. In some cart-stables the same folly prevails; and these stuffed and trussed animals are first swilled and then stirred up in the same manner. My own practice is to *walk briskly* after water; or, in bad weather, and stable-watering, to rub the horse well over the breast, belly, and loins."

From this judicious and practical writer we might deduce much useful information on the subject of feeding horses; but this has been anticipated in the article *FOOD*: nor is it so immediately the groom or horse-keeper's business to direct the kind of food to be given to horses, as duly to regulate the exhibition of it with regard to time and quantity.

*HORSEMANSHIP*, the art of riding safely and gracefully on horseback. Mr. John Lawrence, who writes at once sensibly and ludicrously on this subject, gives the following account of this very useful and necessary art.

"The modern seat on horseback," says he, "and it seems to have owed its establishment to reason confirmed by experience, is, to sit naturally and easily upright upon your saddle, as you would in your chair; your knees about as much bent, and turned inward, your toes somewhat out, and upward, your leg falling nearly straight, and your foot home in the stirrup; your back-bone prepared to bend in the middle upon occasion, your elbows held close to your sides, your hands rather above the horse's withers, or the pommel of the saddle, and your view directed between his ears. This is the true turf or Newmarket seat.

"The decline of riding-house forms in this country, and the universal preference given to expedition, fully confirm the superior use and propriety of a *jockey-seat*. Indeed, our riding-schools are now considerably reformed from the stiffness of ancient practice in all respects. But the reader, on a reference to Hughes's publication, will find we do not entirely agree in all points. It was the practice formerly in the schools, and indeed pretty generally upon the road, to ride with the tip of the toe only in the stirrup; as if it were of more consequence to prepare for falling with safety, than to endeavour to sit securely. Those who preserve a partiality for this venerable custom, we would advise to suspend a final judgment, until they have made a few more essays upon a huge cock-tail half-bred, of that kind which 'cannot go, and yet won't stand still,' and will dart from one side

of the road to the other, as if he really desired to get rid of his burthen. Nor is the ball of the foot a proper rest; chiefly because inconvenient to that erect, or rather almost kneeling, posture, which is required in speedy riding. The riding-house seat is preserved by the balance or equipoise of the body solely; that recommended here by the firm hold of the knee, which is obviously strengthened by the opposite directions of the knee and toe, the one in, the other outward. The use of a fixed seat is to enable the rider to give his horse the proper pulls, without which every experienced jockey knows he can neither go steadily and well, nor last his time. It is not the custom of the schools to spur the horse with a kick, but spurring is always so performed upon the road and field; as the military mode of giving that correction would quite derange a jockey-seat, and would be on other accounts inconvenient.

"There are many persons, unaccustomed to riding on horseback, who, when they occasionally mount, are very justly anxious both for their personal safety and their appearance. It is for the benefit of these we write. If they will immediately adopt proper rules, they will not only make a respectable horseman-like appearance, but will place themselves in the line of improvement, and in a situation the best calculated to insure their safety. Instead of being unable to keep their spurs from the horse's sides, they would, with a proper seat, experience considerable difficulty in reaching them. It is too often neglected, even by people who are fond of horses, to teach their children a good seat, thinking it probably quite sufficient if they can but stick fast; and some young gentlemen are to be seen, riding with their fathers, in a very vulgar and unbecoming style.

"We cannot speak to the antiquity of the English fashion of rising in the stirrups during a trot, and of preserving time with the motions of the body, in unison with those of the horse; but the knowledge of it is discoverable in Baret, and in no author before him. It would be superfluous to give directions on this practice, which will be instantly acquired by observation and use. The same may be said of the gallop, which is performed, on the rider's part, like some other pleasant actions, kneeling; the pulling of the horse helping to keep the rider steady. In the canter, the rider sits upon his seat as in an easy chair. The method of giving the wriggling helps with the bridle, either in the gallop or swift trot, to encourage a horse forward, must be acquired by practice. The first-rate English horses, and the best examples

of horfemanfhip, are to be feen in Hyde-park, where, for many years paf, it has been the prevailing cuftom to take the morning ride, and where no perfon of decent habit and demeanour is refufed admittance."

The following direCTIONS for a juft feat on horfeback, Mr. Lawrence tranfcribes from *Blundeville*. "And fee," fays that writer, "that you do not only fit him boldlie, and without feare, but alfo conceive with yourfelf, that he and you do make as it were but one bodie; and that you both have but one fenfe and one will. And accompanie him with your bodie in any mouing that he maketh, alwaies beholding his head right betwixt his eares, fo as your nofe maie direCtly answer his foretop. Which fhall be a figne unto you to know therobie, whether you fit right in your faddle or not. And let the ridge-bone of your back be euen with his. And let your left hand, holding the reanes of the bridle, be euen with his creaft, and in anie wife keep your thighes and knees clofe to the faddle, holding downe your legs ftraight, like as you do when you are on foote. And let your feete reft upon the ftirrups in their due places, both heele and toe ftanding in fuch fort, as when you fhall turne your head as farre as you can on the one fide, without mouing your body, and looking downward to your ftirrup, you fhall perceiue that your toe doth direCtly anfwere the tip of your nofe; and according as the faddle is made, fo fhall you ride long or fhort. But alwaies let your right ftirrup [if any] be fhorter than the other by half a hole.—

"Likewife his legges muft be pendant of an equal diftance from the horfe's fides, his feete fo leuil in the ftirrups as they are when he walketh on the ground, neither muft his ftirrup-lethers be fo long that his chiefeft labour fhall be to keep his feete in them (for fo a man fhall loofe his true feat by ftretching his legges, as if they were on the tenters), nor fo fhort that he fhall be rayfed from his true feate (the pitch of his knees being diflocated from the points of the faddle), nor ought one ftirrup to be longer than the other (in my judgment), although many worthy men haue fet that order downe. My reafon is, in regard the man muft haue a true and upright feate, and nature hath made his legges (which are the fupporters thereof) one not longer than another, but of an equal length; therefore I cannot fee how the body fhould be kept direCt, the legges one of them hanging fider than another."

We fhall prefent the reader with a few ufeul hints from Mr. Hughes's Treatife on Horfe-manship.

"If you would mount with eafe and fafety, ftand rather before the ftirrup than behind it; then, with the left hand, take the bridle fhort, and the mane together, help yourfelf into the ftirrup with your right, fo that, in mounting, your toe do not touch the horfe. Your foot being in the ftirrup, raife yourfelf till you face the fide of the horfe, and look direCtly acrofs the faddle; then, with your right hand, lay hold of the hinder part of the faddle, and, with your left, lift yourfelf into it.

"On getting off the horfe's back, hold the bridle and mane in the fame manner as when you mounted, hold the pommel of the faddle with your right hand; to raife yourfelf, bring your right leg over the horfe's back, let your right hand hold the hind part of the faddle, and ftand a moment on your ftirrup, juft as when you mounted. But beware that, in difmounting, you bend not your right knee, left the horfe fhould be touched by the spur. Grasp the reins with your hand, putting your little finger between them. Your hand muft be perpendicular, your thumb uppermoft upon the bridle.

"Suffer him not to finger the reins (the groom, in holding the horfe), but only to meddle with that part of the head-ftall which comes down the horfe's cheek: to hold a horfe by the curb, when he is to ftand ftill, is very wrong, becaufe it puts him to needlefs pain.

"When you are troubled with a horfe that is vicious, which ftops fhort, or, by rifing or kicking, endeavours to throw you off, you muft not bend your body forward, as is commonly praCtised in fuch cafes; becaufe that motion throws the breech backward, and moves you from your fork or twift, and calls you out of your feat: but the right way to keep your feat, or to recover it when loft, is, to advance the lower part of your body, and to bend back your fhoulders and upper part. In flying or ftanding leaps, a horfeman's beft fecurity is the bending back of the body.

"The rifing of the horfe does not affect the rider's feat; he is chiefly to guard againft the lafh of the animal's hind-legs, which is beft done by inclining the body backward. Obferve farther, that your legs and thighes are not to be ftiffened, and, as it were, braced up; but your loins fhould be lax and pliable, like the coachman's on his box. By fitting thus loofely, every rough motion of the horfe will be eluded; but the ufual method of fixing the knees only ferves, in great fhocks, to affift the violence of the fall. To fave yourfelf from being hurt, in this cafe, you muft yield a little to the horfe's motion;



by which means you will recover your seat, when an unskilful horseman would be dismounted.

"Take, likewise, particular care not to stretch out your legs before you; because, in so doing, you are pushed on the back of the saddle: nor must you gather up your knees, as if riding upon a pack, for then your thighs are thrown upwards. Let your legs hang perpendicular, and sit not on the thickest part of your thighs, but let them bear inward, that your knees and toes may incline inwards likewise." We have assigned a reason for the present practice of riding with the knee somewhat bent, and the toe turned in a small degree outward and upward; and this small deviation will by no means affect the general utility of Mr. Hughes's system. He proceeds: "If you find your thighs are thrown upwards, open your knees, whereby your fork will come lower on the horse. Let the hollow or inner part of the thighs grasp the saddle, yet so as to keep your body in a right poise. Let your heels hang straight down; for, while your heels are in this position, there is no danger of falling."

The following is an excellent rule:—"If your horse grows unruly, take the reins separately, one in each hand, put your arms forward, and hold him short, but pull him not hard with your arms low; for, by lowering his head, he has the more liberty to throw out his heels: but if you raise his head as high as you can, this will prevent him from rising before or behind; nor, while his head is in this position, can he make either of these motions.

"Is it not reasonable to imagine, that, if a horse is forced towards a carriage which he has started at, he will think he is obliged to attack or run against it? Can it be imagined that the rider's spurring him on, with his face directly to it, he should understand as a sign to pass it? These rational queries are submitted to the serious consideration of such as are fond of always obliging their horses to touch those objects at which they are or affect to be frightened."

Mr. L. also remarks, that most of the riding-school gentlemen are very fond of horses carrying their heads high; a form much more suitable for state and parade than real business. Almost all the Arabians which come over hither, and which have been worked in their own country, go in that manner. Work indeed will bring the head down, but, perhaps, with the nose pushed straight out. Horses of this form are ridiculed by Bared under the name of *astronomers* or *star-gazers*.

Indifferent horsemen should never venture on horseback without spurs. Those who reflect upon the predicament of being placed between a deep ditch and a carriage at which their horses, will see the necessity of this precaution.

There is a circumspection to be adopted advantageously by the unskilful, which will, at first, give them the semblance, and afterwards the reality, of good riding. The method of taking a rein in each hand occasionally (much in use of late years) gives the rider great command over the mouth, neck, and fore-quarters, of a horse.

A good horseman, without pressing too much upon the mouth of his horse, is always prepared to assist him, in case of a blunder, with the united exertions of his arm, chest, shoulders, and loins; and, from the force of constant habit, this comes instinctively, as it were, for the occasion, even if the accident be unnoticed, or the mind otherwise engaged. Both hands upon the bridle are necessary and becoming, in riding fast down steep descents or stony ways; and it is extreme folly to commit the reins to the neck even of the safest horse.

Some speedy and jadish horses will, after they have got their provender, on being travelled briskly thirty or forty miles, at the next stage fall into a slow trot, bend their necks, foam at the mouth, refuse to bear at all upon the bit, and keep perpetually upon the curvet, as if they longed to be upon the parade. Whenever this happens, the best way of concluding the business is to walk them the remainder of the journey, and then give them a week's rest. "You may choose whether you will ride them another," says Mr. Lawrence.

Previous to mounting, every gentleman will find his account in examining the state of both horse and furniture with his own eyes and hands; for, however good and careful his groom may generally be, it is a maxim, that too much ought not to be expected from the head of him who labours with his hands. Besides, all such sedulously avoid trouble, particularly in nice matters. For example, see that your curb is right, that your reins are not twisted, that your girths, one over the other, still bear exactly alike; that the pad be not wrinkled up; but, above all, that your saddle lies exactly level upon the horse's back. Mr. Lawrence says, he has known capital grooms, in the service of sporting gentlemen, so careless in placing a saddle, that it has absolutely worn awry, and would never stand even afterwards.

In journey-riding, every person ought to know, that no great performances are to be

expected from a hack which is not in thorough condition. If he has been lately from grass or straw-yard, or has been kept within upon the saving plan of abridging his food in proportion to his work (a favourite measure with some people), he will receive damage from a long journey, however good he may be in nature. In such case, from thirty to five-and-forty miles is a sufficient day's work.

On the subject of *female equitation*, or ladies riding on horseback, a quotation from Mr. Hughes, whose authority will be acknowledged unquestionable, cannot but be acceptable. He describes, as most proper, the following method of mounting.

"A person should stand before the head of the horse, holding with each hand the upper part of the cheek of the bridle. Then the lady must lay her right hand on the near side of the pommel, and her left hand on the left shoulder of a gentleman (or a servant), who will place both his hands together, the fingers and thumbs being interwoven with each other. This being done, let the lady put her left foot firm in the gentleman's hands, and, giving a little spring, she will be vaulted into the saddle in a moment. When she is thus seated, let her rest the ball of her left foot firm in the stirrup; and, to prevent accidents, she should wear Italian shoes, with very long quarters, and the heel of the shoe coming forward to the middle of the foot. Ladies' shoes made in the common fashion are dangerous, because the foot rests in the hollow between the toes and the heel. Remember that the pommel of the saddle should be made very low, that the lady's knee may not be thrown too high, and the stirrup should hang low; both which circumstances will help to give her a graceful figure, and add greatly to those charms which nature has bestowed on her. When she is thus placed, let her take her whip in her right hand, near the head, with her thumb upon it, and the four fingers under it, holding it obliquely, so that the small end of it may be some inches above the middle of the horse's hind-leg. The arm that supports the whip is always to hang straight, but with a kind of negligent ease: nothing looks more awkward than a lady's holding the whip with her arm crooked at the elbow. A lady should hold her bridle moderately slack, with her little finger under the rein, and the other three fingers passing between the rein, on the top of which her thumb must be placed. Being thus seated, she will either walk her horse off gently, or put him into his other paces at her pleasure.

"The pommel of a lady's saddle should be

always made with a turn-again screw, to take off, in case the rain, wind, or sun, are troublesome, when a lady may ride on the contrary side of the horse."

Queen Elizabeth, it seems, first of all introduced the practice of ladies riding sideways on horseback in England. Much has been said against it, as inconvenient and dangerous; but it is a fact, that scarcely any accidents occur from this practice, even in hunting. It is not only more decorous, but much more convenient for women, in several respects, than any other method.

**HORSE-MEASURE**, a rod of box to slide out of a cane, with a square at the end, being divided into *hands* and *inches*, to measure the height of a horse.

**HORSE-RACING**, a diversion much used and of considerable antiquity in this island. It may be traced as far back as the eleventh century, but did not begin to put on any regular form until the accession of the house of Stuart, most of the princes of which entertained great partiality for the sport. Newmarket began to be frequented previous to the civil war; but in the reign of Charles II. encouraged by the presence of the monarch and his favourites, it shone forth in full glory. Frequent meetings, at stated periods, are now held, and the sport generally continues throughout the week. There are about fourscore places besides, in England, where races are annually held; in some, twice in the year. At Newmarket, nearly all races are determined by one heat, as a measure of necessity, from their usual number and variety.

The speed and perseverance of race-horses must necessarily be affected and governed, in certain degrees, by the weight which they have to carry; and, reasoning upon that position, it will be easily conceived, that, if two horses be equally matched in point of speed and strength, and put to their utmost exertion for a considerable distance, the horse which carries the least weight, by only a single pound, must infallibly have the advantage to a certain degree (however small), in the ability of going more swiftly and lasting longer than his antagonist. The swifter the pace, and the longer it is continued, the more in proportion will the horse be affected by the weight he carries. It is said, that, in running four miles, seven pounds make the difference of a distance, or two hundred and forty yards, between horses of equal goodness. This affair of weight is regulated with scientific precision upon the turf, and forms a grand consideration in all sporting transactions. The weights carried by race-horses vary from the



maximum, twelve stone, fourteen pounds to the stone, to that of a boy of the lightest weight to be found.

The thorough-bred courser is, in a general point of view, the most useful species of the horse, as being applicable to every purpose, from innate qualities, which can be presumed of no other species.

For this a horse should be as light as possible, large, long, but well-shaped; with a short back, long sides, and a little long-legged, and narrow breasted; for such will gallop the lighter and nimbler, and run the faster. *Solleysfel* says, he should be somewhat long-bodied, nervous, of great mettle, good wind, good appetite, very swift, and sensible to the spurs; that he ought to be of an English breed, or barb, of a little size, with pretty small legs, but the back sinews a good distance from the bone, short-jointed, and have neat well-shaped feet. The excellent breed we have of horses for racing in England is not to be equalled in any other country. See the article MATCH.

**HORSE-SHOE**, a cover for defence for the sole of a horse's foot. See the articles SHOE, SHOEING, FOOT, &c.

**HORSE-STEALING**. The legal penalties against this crime are to be found in our statute-books. The offence is nevertheless continued, as Mr. John Lawrence shews, in a most daring and systematic manner. In vol. II. p. 117, of his "*Philosophical and practical Treatise on Horses*," he says, "I have revolved in my mind a number of different schemes for the recovery of stolen horses, all which seem to be clogged with insuperable difficulties. I have sometimes thought, that, through the medium of the post-office, a plan might be practicable of sending instantly a description of a lost horse to every parish in the kingdom; but of that, I suppose, the expence would be too considerable. It is said, the laws which regulate the slaughtering of horses are not sufficiently precise, nor the penalties considerable enough. In fine, a horse which may suddenly be moved to a great distance, and so easily disposed of, particularly in times of brisk export, is such a temptation to the dishonest and profligate, and the chances of recovery are so few, expensive, and uncertain, that there appears but little hope in any but measures of prevention, in the first instance. The best security that I know of is to lock, upon the flank or pastern of the animal, a case-hardened and *file-proof* iron ring, lined with some soft material to prevent chafing, and bearing the owner's name and place of abode; some gentlemen have preferred the fixing a collar upon the neck,

which is rather more expensive, and, perhaps, less secure from the file: but, in either case, the price would not be any great object. It is granted there would be no absolute security in this plan, since thieves get their bread by their ingenuity; but it would certainly place a very formidable difficulty in the way of the exercise of their calling. There are few thieves, I think, but who, on inspection, would prefer a horse without this troublesome mark upon him. Granting a man did his business at random, and blundered upon a horse in the dark bearing the aforesaid mark, as soon as the light should enable him to discover it, he would, no doubt, run away from his new and dangerous bargain as fast as he would from a thief-taker. Suppose even a man went prepared with tools proper to destroy the iron, he must have an assistant, and the operation would demand some time, which would risk a discovery. In case of strays, the security is complete. But in all cases, it seems, the present trouble is supposed to outweigh the eventual benefit of precaution: that I leave to the calculation of those who are interested." We think the idea a good one.

**HOUGH**, or **HAM**, OF A HORSE. This is the ply or bending part of the hind-leg, comprehending also the point behind and opposite, called the HOCK. The hams of a horse should be large, full, and not too much bent, nor overcharged with flesh, nervous, supple, and dry; otherwise they will be subject to many imperfections.

**HOUND**, a species of dog used for hunting. See DOG.

**HOUSING**, in the manege, a cover laid over the saddle of a horse, in order to save it from the weather, dirt, &c.

**HUMECTATION**, in pharmacy, the moistening or preparing medicines, by steeping them in water, either to soften and relax their solid parts, or to prevent the evaporation of their more subtle contents.

**HUMERAL ARTERY**. This rises from the lower and fore side of the axillaris, and runs backward between the head of the os humeri and teres major, surrounding the articulation, till it reaches the posterior part of the deltoides, to which it is distributed. In its course, it gives off several branches to the neighbouring parts. There are also the *humeral muscle*, or *deltoid*, and the *humeral or cervical nerve*.

**HUMERUS**, the arm-bone. For this in the horse, see the article BONES, and Plate V. with the description of "*bones in the right upper limb*." The muscle by which the humerus is elevated may be viewed in Plate XII. See the description



of muscles "*in the neck, breast, shoulders, and trunk,*" under the article HORSE ANATOMY.

HUMOUR, in a lax sense, may be taken for any fluid; but physicians restrain it chiefly to those of animal bodies, and understand by it, in the largest acceptation within that restriction, all the juices contained in the canals or vessels of an animal body, and which are distinguished from one another by some manifest qualities, according to their different principles. The followers of Galen assigned different humours for the compounding parts of the blood, and a system of pathology founded on a morbid state of the humours existed till after the days of Boerhaave. But this is almost universally and justly subverted, at least in Britain, though it is still adhered to on the continent.

HUMOUR OF THE EYE. See EYE.

HUMOURS. When a swelling happens on any part, the common phrase is, the humours are fallen there; hence endeavours are made to draw them away, or to repel them. Thus, by a jargon of words, the mind is led off both from attending to the proper means, and from the method of applying them to the greatest advantage. As a relaxation of the solids may be the cause of the complaint; by consequence, relief can be only had from restoring their former strength; and, according to other different causes, different remedies will be required.

Thus it is often affirmed that humours fall down on the limbs, when, with more propriety, it might be said, they cannot so well rise up or circulate so freely in perpendicular as in diagonal canals; for the force of the heart is the same, whether to raise a column of blood in an upright or horizontal direction, though it is not the same in respect to the situation of the vessels: for, when an animal is erect, the blood-vessels in the legs are more on a stretch by far than when he lies down; and, if the vessels are in a lax state naturally, or relaxed by external injuries, they are not able to propel the fluids forwards, and hence, from a retarded circulation, arises a swelling in the part affected. Dr. Bracken was the first writer on farriery who endeavoured to set this matter in a clear light. He says, if the reader would be at the pains to get a clear idea of the blood's circulation, with the secretions from it, and consider the solids as composed of elastic fibres, which are sometimes in a lax state, and at others in a tight or firm one, this knowledge would soon convince him, that the extreme parts may be swelled without humours falling down upon them, which arises from a difficulty in the circulation to push on the blood in perpendicular columns, or else

from a laxity of the vessels themselves. "In order to make this doctrine as familiar as possible," says he, "let us suppose that a man or horse, in perfect health, whose blood and juices are in the best condition, receives a violent blow on the leg, the consequence of which is a bruise and swelling; if the limb of either is kept in a perpendicular situation, with little or no motion, the swelling will continue, and we may say, if we please, *the humours are fallen into it*: but change only the position, and continue the limb of either in a supine or level one, the swelling will then soon abate, and the humours disappear."

In this case, where were the humours before the accident? How came they so suddenly to the injured limb, and so soon to disappear? Is it not more reasonable to suppose, that the swelling arose from a retarded circulation in the part injured, the vessels, by the violence of the blow, having lost their tone, and being so preternaturally distended by the stagnant blood, that a free circulation through the part was thereby interrupted, and that this swelling would have continued, had not the obstruction been removed by a different posture, assisted by proper applications? And is it not obvious, in dropsical and other swellings in the extreme parts from lax fibres, that though the legs shall be enormously swelled, after having been, in an erect posture all the day, yet that, after lying twelve hours in a supine one, they will recover their natural shape?

The word humours, applied to the system in general, contains this supposition, viz. that there is a faulty quality in the fluid spoken of. Humour is only another word for fluid. The blood is the general humour or fluid, from whence all the other humours or fluids in the body, except the chyle, are separated: naturally, these humours or fluids neither err in quantity nor quality, though they may, by consequence, become faulty either way, or in both at the same time.

Again, to say the humours or fluids, without specifying what particular ones are intended, is using a word without signification or precision; for, without a knowledge of the particular humour or fluid that is in fault, we must be ignorant of the proper method of altering either the quantity or the quality. The qualities of all are changed by alteratives; but different alteratives are sometimes required, not only for the different humours, but also for the different states of the same humour: and as to the quantity, a redundancy of red blood requires bleeding, an excess of serum requires purges or diuretics,



and other means are adapted to other humours; particular acquaintance with which is necessary before they can be altered in their quality, or either increased or diminished in their quantity.

As, from human medicine, however, the humoral pathology is exploded, so should it be from the veterinary. Whatever changes appear in the fluids of an animal, they are not to be considered as *primary*, but the mere consequence of a defect in the vessels or organs in which they have been elaborated or secreted: our remedies must therefore be addressed to the latter in almost all cases.

**HUNGER**, an animal appetite arising from an uneasy sensation at the stomach for food. When the stomach is empty, and the fibres possess their natural tensility, they draw up closely the folds of the villous coat, so as to cause that sensation; but, when they are distended with food, it is again removed. See the article **APETITE**.

**HUNGRY EVIL**, a vulgar term, denoting an inordinate desire in horses to eat. See **APETITE**.

**HUNTER**, a name given to a horse qualified to carry a person in the chace. The shape of the horse designed for this service should be strong, and *well put together*, as the jockeys express it. Irregular or unequal shapes in these creatures always denote weakness. The inequalities in shape which shew a horse improper for the chace are, the having a large head and a small neck, a large leg and a small foot, and the like. The head of a hunter should indeed always be large, but the neck should also be thick and strong to support it. The head should be lean, the nostrils wide, and the windpipe straight.

The horse, in order to his behaving well in the field, ought to have great care and indulgence in the stable: he ought to have as much rest and quiet as may be, to be kept well supplied with good meat, clean litter, and fresh water by him: he should be often dressed, and suffered to sleep as much as he pleases. He should be so fed that his dung may be rather soft than hard, and likewise of a bright and clean colour. All this may be easily managed by the continual observance and change of his food, as occasion requires. After his usual scourings, he should have exercise, and mashes of sweet malt, or bread and beans; or wheat and beans mixed together may be his best food, and beans and oats his worst.

Some very great sportsmen are for keeping their horses out at grass all the buck-hunting

season, never taking them up into the stable at all, but allowing them in the field as much oats with their grass as they will eat. The horse may be thus ridden three days in the week for the whole season, and not hurt by it, nor ever shewing any marks of injury afterwards.

The general figure of a horse intended for a hunter should be this: The ears should be small, open, and pricked; or, though they be somewhat long, yet if they stand up erect and bold, like those of a fox, it is a sign of toughness or hardiness. The forehead should be long and broad, not flat, or, as it is usually termed, *mare-faced*, but rising in the middle like that of a hare; the feather should be placed above the eye, the contrary being thought by some not so agreeable. The eyes should be full, large, and bright; the nostrils not only large, but looking red and fresh within; for an open and fresh nostril is always esteemed a sign of good wind. The mouth should be large, deep in the wicks, and hairy. The windpipe should be large, and appear straight when he bridles his head; for if, on the contrary, it bends like a bow on his bridling, it is not formed for a free passage of the breath. This defect in a horse is expressed among the dealers by the phrase *cock-thropled*. The head should be so set on to the neck, that a space may be felt between the neck and the chine: when there is no such space, the horse is said to be *bull-necked*, and this is not only a blemish in the beauty of the horse, but it also occasions his wind not to be so good. The crest should be strong, firm, and well risen; the neck should be straight and firm, not loose and pliant; the breast should be strong and broad, the ribs round like a barrel, the fillets large, the buttocks rather oval than broad, the legs clean, flat, and straight; and, finally, the mane and tail ought to be long and thin, not short and bushy, the last being counted a mark of dullness. When a hunter is thus formed, and has been taught such obedience that he will readily answer to the rider's signals, both of the bridle and hand, the voice, calf of the leg, and the spurs, that he knows how to make his way forward, and has gained a true temper of mouth and a right placing of his head, and has learned to stop and to turn readily, if his age be sufficiently advanced, he is ready for the field. It is a rule with sportsmen, that no horse should be used in hunting till he is full five years old, though some will hunt them at four; but the horse at this time is not come up to his true strength and courage, and will not only fail at very tough trials, but will be subject to strains, and

accidents of that kind, much more than if he were to be kept another year, when his strength would be more confirmed.

When a hunter is five years old, he may be put to grafs from the middle of May till Bartholomew-tide; for the weather between these is so hot, that it will be very proper to spare him from work. He should then be taken up, while his coat is yet smooth and sleek, and put into the stable. When he is first brought home, he should be put in some secure and spacious place, where he may evacuate his body by degrees, and not be brought all at once to a warm keeping: the next night he may be stabled up. It is a general rule with many not to clothe and stable up their horses till two or three days after they are taken from grafs; and others who put them in the stable after the first night, yet will not dress and clothe them till three or four days afterward.

It is a general practice among grooms, in many places, to give their hunters wheat-straw as soon as they are taken up from grafs. They do this to *take up their bellies*; but it is always found that the dung is hard after this food, and is voided with pain and difficulty, which is in general a very improper thing for these horses. It is better, therefore, to depend upon moderate airing, warm clothing, and good old hay and old corn, than to have recourse to any thing of this kind.

When the horse has evacuated all his grafs, and has been properly shod, and the shoes have had time to settle to his feet, he may be ridden abroad, and treated in the manner following:

The groom ought to visit him early in the morning, at five o'clock in the long days, and at six in the winter season; when he must clean out the stable, and feel the horse's neck, flank, and belly, to find the state of his health. If the flank feels soft and flabby, there is a necessity for good diet; otherwise any great exercise will occasion swellings in the heels. After this examination, a handful or two of good old oats, well sifted, should be given him: this will make him have more inclination to water, and will also make the water agree better than if he drank fasting. After this he is to be tied up and dressed. If, in the doing of this, he opens his mouth as if he would bite, or attempts to kick, it is a proof that the teeth of the curry-comb are too sharp, and must be filed blunter. If after this he continues the same tricks, it is through wantonness, and he should be corrected for it. The intent of currying being only to raise the dust, this is to be brushed off after-

wards with a horse-tail nailed to a handle, or any other light brush; then he is to be rubbed down with the brush, and dusted a second time; he should then be rubbed over with a wet hand, and all the loose hairs, and whatever foulness there is, should be picked off. When this is done, and he is wiped dry as at first, a large saddle-cloth is to be put on, reaching down to the spurring-place; then the saddle is to be put on, and a cloth thrown over it, that he may not take cold: then rub down his legs, and pick his feet with an iron picker, and let the mane and tail be combed with a wet mane-comb. You may omit the custom of spurting some beer into his mouth just before leading him out of the stable. He should then be mounted, and walked a mile at least to some running water, and there watered; but he must only be suffered to take about half his water at one drinking.

It is the custom of many to gallop the horse at a violent rate as soon as he comes out of the water; but this is extremely wrong, for many reasons. It endangers the breaking a horse's wind more than any other practice, and often has been fatal to good horses. It uses them also to the disagreeable trick we find in many horses, of running away as soon as they come out of the water; and with some it makes them averse to drinking, so that they will rather endure thirst, and hurt themselves greatly by it, than bring on the violent exercise which they remember always follows it. The better way is to walk him a little after he is out of the water, then put him to a gentle gallop for a little while, and after this bring him to the water again. This should be done three or four times, till he will not drink any more. If there is a hilly place near the watering-place, it is always well to ride up to it; if otherwise, any place is to be chosen where there is free air and fun. That the creature may enjoy the benefit of this, he is not to be galloped, but walked about in this place an hour, and then taken home to the stable. The pleasure the horse himself takes in these airings, when well managed, is very evident; for he will gape, yawn, and shrug up his body; and in these, whenever he will stand still to stale, dung, or listen to any noise, he is not to be hindered from it, but encouraged in every thing of this kind.

The advantages of these airings are very evident; they circulate the blood, teach the creature how to make his breathing agree with the rest of the motions of his body, and give him an appetite to his food, which hunters and racers, that are kept stalled up, are otherwise very apt



to lose. On returning from airing, the litter in the stable should be fresh; and by stirring this, and whistling, he will be brought to stale. Then he is to be led to the stall, and tied up, and again carefully rubbed down: then he should be covered with a linen cloth next his body, and a canvas one over that, made to fit him, and reaching down to his legs. This is a custom of the Turks, who are, of all people, the most nice and careful of their horses. Over this covering there should be put a body-cloth of six or eight straps; this keeps his belly in shape, and does not hurt him. This clothing will be sufficient while the weather is not very sharp; but, in severe seasons, when the hair begins to rise and start in the uncovered parts, a woollen cloth is to be added, and this will always prove sufficient.

Different horses, and different seasons, make variety in the degree of clothing necessary; but there always is an obvious rule to point out the necessary changes, the roughness of the coat being a mark of the want of clothing, and the smoothness of it a proof that the clothing is sufficient. Therefore, if at any time the hair is found to start, it is a notice that some farther clothing is to be added.

If the horse sweats much in the night, it is a sign that he is over-fed, and wants exercise: this therefore is easily remedied. An hour or more after the horse is come in from his airing, the groom should give him a wisp of clean hay, making him eat it out of his hand; after this let the manger be well cleaned out, and a quartern of oats, clean sifted, be given him. If he eats up this with an appetite, he should have more given him; but, if he is slow and indifferent about it, he must have no more. The business is to give him enough, but not to cloy him with food.

If the horse gets flesh too fast on this home-feeding, he is not to be stinted to prevent it, but only his exercise increased: this will take down his flesh, and at the same time give him strength and wind. After the feeding in the morning is over, the stable is to be shut up, only leaving him a little hay on his litter. He need be no more looked at till one o'clock, and then only rubbed down, and left again till the time of his evening watering, which is four o'clock in the summer, and three in the winter. When he has been watered, he must be kept out an hour or two, or more if necessary, and then taken home and rubbed as after the morning watering. Then he is to have a feed of corn at six o'clock, and another at nine at night; and being then cleaned, and his litter put in or-

der, and hay enough left for the night, he is to be left till morning. This is the direction for one day, and in this manner he is to be treated every day for a fortnight, at the end of which time his flesh will be so hardened, his wind so improved, his mouth so quickened, and his gallop brought to so good a stroke, that he will be fit to be put to moderate hunting. During the time that he is used in hunting, he must be ordered on his days of rest exactly as is directed for the fortnight when he is in preparation; but, as his exercise is now greatly increased, he must be allowed, as a more strengthening food, some old split beans, mixed at every feeding with his oats.

The day before the horse is to hunt, he must have no beans, because they are hard of digestion, but only some oats with bread; or if he will be brought to eat bread alone, that will be best of all. His evening feed should, on this day, be somewhat earlier than usual; and, after this, he is only to have a wisp of hay out of the groom's hand till he return from hunting.

**HYDARTHROS** (*υδαρθρος*, from *υδωρ*, *water*, and *αρθρον*, *a joint*), a sort of clear water which issues from wounded joints. It is also a name of the *Synovia*, and the same as *Hydarthrus*.

**HYDARTHROS** (*υδαρθρος*, from *υδωρ*, *water*, and *αρθρον*, *a joint*), a white swelling, a species of which is a dropy in the joint. Dr. Cullen places it as a genus of disease in the class *Locales*, and order *Tumores*. Another species is the *Spina Ventosa*; and this Dr. Cullen places as a variety of the *Phlogosis Phlegmone*.

**HYDATIDS**, transparent bags filled with water; sometimes found in the human subject single, at others in clusters, in hydropic persons, generally on the liver, but also on many other parts. In the London Medical Transactions, p. 486, is an instance of hydatids coughed up from the lungs. Dr. Cullen places this genus of disease in the class *Locales*, and order *Tumores*; and defines it a cuticular vesicle, full of aqueous humour.

There are two species. An hydatid of the *first* sort is *organised*, and connected with the vessels by peduncles. It consists of a bag, or bags of different sizes, filled with serum; as these bags increase, they thicken. Sometimes their contents are bloody, and flakes of coagulable lymph are floating in them. This kind of hydatids only disturb by their size. The hydatids of the ovaria are of this sort, so are those in the kidneys, uterus, &c.

The *second* are supposed to be confined to the

liver, and consist of a strong bag formed in the substance of that viscus. This bag is vascular, and lined with a soft, pulpy, opaque coat, resembling the retina of the eye. It contains a liquor of a whey colour, in which a number of detached vesicles are found swimming, or there is a series of them, one within another. This species is productive of worse effects than the former. This bag sometimes bursts, and its contents falling into the cavity of the belly, a kind of ascites is the consequence: its external cyst is subject to inflammation, and adhesion to the adjacent parts, whence, if suppuration takes place, various ill consequences may follow.

Hydatids of the first kind are found within the skull in sheep affected with the vertigo, or, as it is vulgarly called, the Grip; and their removal by trepanning, though itself a hazardous operation, is perhaps the only method of cure likely to be successful.

**HYDRAGOGUE** (*υδραγωγον*, from *υδωρ*, *aqua*, *water*, and *αγω*, *duco*, *to draw*), such a medicine as occasions the discharge of watery humours, which is generally the case of the stronger cathartics; because they shake most forcibly, by their vellications, the bowels and their appendages, so as to squeeze out water enough to make the stools seem to be little else.

**HYDRARGYRUS**, *Quicksilver*. See **MERCURY**.

**HYDROCELE** (*υδροκηλη*, from *υδωρ*, *water*, and *κηλη*, *a tumour*), is properly any watery swelling, but is used only for that of the tunica vaginalis; also called a dropfy of the scrotum.

**HYDROCEPHALUS** (*υδροκεφαλον*, from *υδωρ*, *water*, and *κεφαλη*, *caput*, *the head*), is when the head is loaded with water. This is the case with many children, and it increases till they die convulsed, if not remedied; which is not to be done without severe blistering upon the sutures. There is the *hydrocephalus externus*, and *hydrocephalus internus*. In the latter, the water is sometimes between the skull and the membranes of the brain, or betwixt the membranes of the brain, but most frequently in the ventricles. Besides other symptoms, there is an afflicting head-ach, a costiveness hardly surmountable, a diminution of sight, and proportioned enlargement of the pupils of the eyes. Dr. Cullen terms it *apoplexia hydrocephalica*.

**HYDROCYSTIS**, encysted dropfy; or a dropfy in a particular part.

**HYDROGENE** (from *υδωρ*, *water*, and *γενεσθαι*, *to become*, or *γενναω*, *to produce*), one of the constituent parts of water. According to

Chaptal, it is inflammable air, the phlogiston of Kirwan, or hydrogenous gas. Its property of burning oxygene or vital air has caused it to be distinguished by the title of inflammable air. It may be extracted from all bodies in which it is a constituent part; but the purest is that which is procured from the decomposition of water. If the sulphuric acid is poured upon iron or zinc, the water which serves as a vehicle for the acid is decomposed on the metal, its oxygene combines with it, while the hydrogenous gas escapes. Water may be decomposed likewise still more directly by throwing it upon iron strongly heated: the hydrogen gas may be obtained by causing water to pass through a tube of iron ignited to whiteness. It may also be produced by simple distillation of vegetables. Vegetable fermentation and animal putrefaction likewise produce this gaseous substance. Hydrogene gas has a disagreeable stinking odour, is not proper for respiration, is not combustible alone, and does not burn but by the concurrence of oxygene.

**HYDROMEL** (*υδρομελι*, from *υδωρ*, *water*, and *μελι*, *mel*, *honey*), a composition of water and honey.

**HYDROMETRA OVARIUM**, dropfy of the ovaries.

**HYDROMPHALOS** (*υδρομφαλον*, from *υδωρ*, *water*, and *μφαλος*, *a navel*), a tumour of the navel containing water.

**HYDROPHOBIA** (from *υδωρ*, *water*, and *φοβω*, *to fear*), *a dread of water*; called also *aquæ pavor*. It is a symptom of that species of madness caused by the bite of a mad animal, whence the distemper is called so itself; but this symptom is not peculiar to this disease, nor always attendant on it. This disorder is called *rabies canina*. Dr. James observes, that this kind of madness properly belongs to the canine genus, consisting of three species, viz. dogs, foxes, and wolves, to whom only it seems natural, scarcely ever appearing in other animals, except it be inflicted by those of the dog-kind. Dr. Heysham defines it to be an aversion and horror at liquids, as exciting a painful convulsion of the pharynx, occurring at an indetermined period, after the virus has been received.

In all animals, the hydrophobia is a nervous disorder, though followed by inflammatory symptoms; and there is a loathing and great dread of drinking any liquids, because of creating a painful convulsion of the pharynx.

Writers on this disease in the human subject have supposed its principal seat to be about the stomach, and parts contiguous to it. Dr. Se-



leg thinks that it is the par vagum and intercostal nerves; for most of the symptoms happen where these nerves are interspersed.

In man, the smallest quantity of the saliva of a mad dog, and that either fresh or dry, produces this disease. The infection may lie dormant for many months; but in general it appears in three or four weeks. Whether this obtains in the inferior animals has not been well ascertained. Some authors have asserted, that, in order to communicate the infection, a wound is no more necessary than it is in the small-pox. To man it is communicated by the saliva only; but dogs are supposed to have received it by merely being put into the kennel where mad dogs have been before. It is supposed that the dog-kind only have this disorder naturally; but other animals, having received the infection, may communicate it to other species. Under the article Dog, we have introduced a description of the symptoms as they occur in that animal; but the following is of more authority.

According to Boerhaave, the signs of madness in a dog are as follow: He becomes dull, solitary, and endeavours to hide himself; he seldom barks, but makes a kind of murmuring noise; at the same time he refuses all kinds of meat and drink; he is enraged at and flies upon strangers, but in this stage he remembers and respects his master; his ears and head hang down; he walks nodding, as if overpowered with sleep: this is the first stage, and a bite now has been falsely thought not so bad as afterwards. After these symptoms, the dog begins to pant; he breathes quick and heavy; hangs out his tongue to emit a great deal of froth from his mouth, which he keeps perpetually open; sometimes he walks slowly, as if half asleep, and then suddenly runs, but not always directly forward, as is pretended. At length he forgets his master; his eyes look dispirited, dull, full of tears, and red; his tongue is of a lead colour; he is suddenly extenuated; he grows faint and weak, oft falls down, then rises up, and attempts to fly at every thing, and now grows mad and furious: this second stage seldom continues thirty hours, death by that time putting an end to the disease, and a bite received now is incurable.

To these symptoms the following may be added, which are considered as certain signs of a dog's being mad. 1. All other dogs, upon smelling the dog that is going mad, will avoid him, and run away with horror. 2. The tone of the dog's voice, when he barks, seems hollow and hoarse. If he is confined, he barks incessantly for a day or two.

If the foregoing circumstances relative to this disease in brute animals are to be relied on, how imperious a duty is it, instead of attempting the cure, by resorting to the silly methods recommended by ignorant people, immediately to destroy the animal, and by that means not only prevent the infection from being communicated to others of his species, but incalculable mischiefs to mankind.

**HYDROPHYSOCELE** (from *υδωρ*, water, *φυστα*, a flatus, and *κηλη*, a hernia), a hernia proceeding from a mixture of water and flatulences.

**HYDROPIC**, one that is troubled with a dropfy; also a medicine contrived to cure that disease.

**HYDROPS** (*υδρωψ*, from *υδωρ*, water), a dropfy; thus named because water is the most visible cause of the distemper.

**HYDROPS ARTICULI**, dropfy of the joint, a species of spina ventosa.

**HYDROPS CYSTICUS**, the encysted dropfy. It is water inclosed in a cyst, or perhaps in an hydatid.

**HYDROPS OVARII**, dropfy of the ovary.

**HYDROPS PECTORIS**, i. e. Hydrothorax, or dropfy in the chest.

**HYDRORACHITIS**, a watery tumour, formed within the spinal tube, or within the dura-matral covering of the spinal marrow, externally protruding in the course of the spine, and where it protrudes there is a considerable vacancy betwixt the two vertebræ immediately above and below it. It is found to exist in children at the birth, and is deemed incurable.

**HYDROSACCHARUM** (*υδροσακχαρον*), a composition of sugar and water, which answers to the hydromel, by changing honey for sugar.

**HYDROSARCA** (from *υδωρ*, water, and *σαρξ*, flesh), a tumour formed of water and of flesh.

**HYDROSARCOCELE** (from *υδωρ*, water, *σαρξ*, flesh, and *κηλη*, a tumour), a species of hernia, composed of flesh and water.

**HYDROSELINUM**, water-parasley.

**HYDROTHORAX**, a dropfy in the chest.

**HYDROTICUS**, **HYDROTICE** (*υδρωτικος*, from *υδρωρ*, sweat), a medicine that promotes sweat.

**HYGRA**, liquid plasters; also liquid rosin.

**HYGROCIRCOCELE** (*υγροκιρσοκηλη*, from *υγρος*, humid, *κιρσος*, a varix, and *κηλη*, a tumour), a species of hernia. It is when the spermatic veins are varicous, and the scrotum is filled with water: it also implies a watery

and varicous swelling of the vessels of the testis.

**HYMEN** (ὕμην), a membrane in general; but by it is usually understood the membrane which appears in the form of a crescent, and is situated at the entrance of the vagina in the human female. Mr. Hunter has erroneously supposed this part to exist in the mare. See **GENERATION, Organs of**.

**HYOGLOSSUS**, the name of a muscle of the tongue. It rises from the basis, but chiefly from the cornu of the os hyoides, running laterally and forwards, to shorten the tongue. Some divide this muscle into three, and call them *basio-glossus*, *chondro-glossus*, and *cerato-glossus*.

**HYOIDES OS** (from *υ*, and *ειδος*), the basis and support of the tongue. It is situated in an horizontal position, between the root of the tongue and the larynx; it is convex on its anterior part, and hollow on its posterior; the cornua become smaller as they run back, and rather diverge; at the end of the cornua there is a graniform appendicle, from whence a ligament runs to the styloid process of the os temporis, and another ligament connects the bone to the larynx.

**HYO-PHARYNGÆUS**. The hyo-pharyngei muscles, in general, are those on each side, which are inserted in the os hyoides; and they may be reckoned three pairs, viz. the *basio-pharyngei*, *kerato-pharyngæus major* and *minor*. They come from the basis and the horns of the os hyoides. Innes calls it *constrictor pharyngis medius*. Its use is to compress that part of the pharynx which it covers, and to draw it on the os hyoides upwards.

**HYOSCYAMUS** (from *υς*, a swine, and *κυαμος*, a bean), hog's-bane. But the plants to which this name is given are called *hen-bane*.

**HYO-THYROIDEUS** (from the *os hyoides*, and *θυρεοειδης*, scutiformis). These muscles are also called *thyroidæi*. They run from the thyroid cartilage to the os hyoides; they are attached to the knobs of the cartilage, and the line between them. Their use is to bring these knobs nearer to each other. See Plate X. and the description of muscles "in the neck," under the article **HORSE**.

**HYPERICUM**, St. John's wort, a genus in Linnæus's botany. He enumerates forty-two species, besides varieties. The college have retained the flower of the *hypericum perforatum*, Linn. in their pharmacopœia. This plant, though included in the multifarious prescriptions of the old farriers, in conformity with the prejudices of our times in favour of remedies

denominated *simples*, is of little or no value to the modern veterinarian.

**HYPEROSTOSIS**, the swelling of a whole bone. It is synonymous with *Exostosis* in Cullen's Nosology.

**HYPERSARCOMA**, a polypus in the nose; a fleshy excrescence.

**HYPERSARCOSIS** (ὕπερσάρκωσις, from *ὑπερ*, super, above, and *σὰρξ*, caro, flesh), more flesh than needful, or excrescences of flesh, generally on the lips of wounds, called *funguses*.

**HYPNOTIC** (ὕπνοτικός, from *ὑπνος*, somnus, sleep), any medicine that induces sleep.

**HYPOCATHARSIS** (ὑποκαθάρσις, from *υπο*, sub, under, and *καθαίρω*, purgo, to purge), is when a medicine does not work so much as expected, or but very little; or a slight purging, when it is a disorder.

**HYPOCHONDRIAC REGIONS** (from *υπο*, sub, under, and *χόνδρος*, cartilago, a cartilage); that is, the two regions lying on each side the cartilago ensiformis, and those of the ribs and the tip of the breast, which have in one the liver, and in the other the spleen. Hence disorders of those viscera, especially of the spleen, are called the *Hypochondriasis*.

**HYPOCRANIUM**, a kind of abscess, so called because seated under the cranium, between it and the dura mater.

**HYPODERMIS, the CLITORIS.**

**HYPOGASTRICÆ ARTERIÆ**. See **ILIACÆ ARTERIÆ** for the external hypogastric arteries. The hypogastric or internal iliac arteries dip into the inside of the pelvis, just over the shoulder of the sacrum: when it arrives at the side of the pelvis, it throws down branches to the contents of the pelvis, and then goes through the sciatic notch.

**HYPOGASTRICÆ VENÆ**. The veins run the same course with their corresponding arteries, except that they do not send off the vena umbilicalis. The hypogastric veins are the internal iliac branches.

**HYPOGASTRIUM** (ὕπογαστριον, from *υπο*, sub, under, and *γαστρος*, venter, a belly), that region of the belly reaching from three inches below the navel to the os pubis and groins.

**HYPGLOSSI NERVI, EXTERNI vel MAJORES**, also called *Glossatorii* and *Linguales*. They are the ninth pair of nerves in the human subject. They have their origin just above the foramen magnum, and go out at the holes on the sides of the same great hole, above the condyles of the os occipitis. As soon as they are passed out of the cranium, they run betwixt the carotid artery, and the internal jugular vein, to the tongue, on the side of the digastric muscle.



**HYPOTHESIS** (*υποθεσις*, from *υποτιθημι*, *suppono*, to suppose), signifies strictly any conjecture or supposition advanced; but in a large sense. It is a way of reasoning upon somewhat supposed, that cannot of itself be proved, or, for dispatch, is taken for granted. But this way of reasoning has of late been justly exploded in physic, and many other sciences; because that argues from demonstrable principles, which our senses are witnesses to, and will not allow any thing

supposititious, unless sometimes for argument's sake.

**HYSTERA** (*υστερα*), the uterus; also the secundines.

**HYSTERITIS**, inflammation of the womb. Dr. Cullen places this genus of disease in the class *Pyrexia*, and order *Phlegmasia*.

**HYSTEROTOMIA** (from *υστερα*, the womb, and *τεμνω*, to cut), the Cæsarean section, or cutting out of the womb of the mother a foetus which cannot be otherwise brought forth.

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**ICHOR** (*ιχωρ*), signifies strictly a thin acrid watery humour, like serum; but it also sometimes denotes a thicker kind that flows from ulcers. The several acceptations of this term by authors are here needless to be recited, it being used in very different senses. It is also called *sanies*.

**ICTERIC**, is said of a patient that has the jaundice; and icteric remedies are medicines against the jaundice.

**ICTERUS**, the jaundice. See **JAUNDICE**.

**ICTUS**, a stroke or blow. It signifies also the pulsation of an artery, and the sting of a bee or other insect.

**ICTUS SOLARIS**, a stroke of the sun. It is the effect of too violent an influence of the sun on the head. Dr. Cullen ranks it as a variety of apoplexy, under the name of *Carus ab insolatione*.

**IDIOPATHIC** (*ιδιοπαθεια*, from *ιδιος*, proper, or one's own, and *παθος*, affection, or passion). Thus the head is affected idiospathically in a lethargy, and the lungs in a pleurisy; but, when tense parts suffer by consent, that is, by disorders residing in other parts, they are then said to suffer by *sympathy*.

**IDIOSYNCRASY** (from *ιδιος*, peculiar, *συν*, with, and *κεραννυμι*, to mix). Every individual animal has a state of health peculiar to itself. Different bodies seem to vary from each other,

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both with respect to their solids and fluids, though each may, at the same time, be in a sound condition. This peculiarity of constitution, by which they differ from other sound bodies, is called *idiosyncrasy*, or peculiarity of constitution. The instances are frequent in the human subject.

**IGNIS SACER**, a name of the erysipelas, and of a species of herpes, the *herpes exedens*. It is also the erythematous species of inflammation. *Ignis Sancti Antonii*, St. Anthony's Fire, is another name for the erysipelas.

**IGNITION**, in chemistry, the calcining or making any thing red hot.

**ILEON INTESTINUM** (*ειλεον*), so called from *ειλεω*, to turn about, because it makes many convolutions. It is one of the small guts. See **ABDOMEN**. Where the jejunum ends, the ileum begins. Its convolutions surround those of the jejunum, on the two lateral and inferior sides, and it winds about from the left side by the hypogastrum to the right side, where it terminates in a transverse manner at the fleshy brim of the pelvis, and forms the first of the great intestines, called *cæcum*.

**ILEUS** (*ειλεος*, *ιλεος*), the colic; but more particularly the iliac passion.

**ILIA** (the plural of **ILE**), the flanks. They are the spaces between the lowest of the false ribs, and the upper edge of the os ilium on each

side; they are the two divisions of the regio umbilicalis.

ILIACA, the same as ILEUS.

ILIAC MUSCLE, is a muscle of the thigh, which arises fleshy from the internal concave part of the os ilium; and, in its descent over the inferior part of it, joins with the psoas magnus, and is inserted with it under the termination of the pectineus. This, with the psoas magnus, moves the thigh forward in walking.

ILIAC PASSION (εἰλεός, ἰλεός), that kind of spasmodic colic, whose seat is the ilium, whereby that gut is twisted, or one part enters the cavity of the part immediately below or above. Hence it is also called the *volvulus*, from *volvo*, to roll.

ILIAC ARTERIES. They are formed by the bifurcation of the aorta, at about the fourth vertebra of the loins. They descend about three fingers' breadth from their origin, and, when they are arrived at the psoas muscle (on each side), or rather are upon it, they each divide into two, an external and an internal; the external has no particular name, the internal is called *hypogastrica*. The external runs down to the ligamentum Fallopii, under which it goes out of the abdomen; as it passes out of the abdomen, it detaches two branches, one internal, the other external; the inner is called *epigastrica*, the external is called *innominata*.

The *lesser iliac* arteries are the most posterior branches of the hypogastric arteries. Sometimes they are branches of the glutææ arteriæ.

ILIAC VEINS. These are formed by the bifurcation of the vena cava, about the last vertebra of the loins. Presently after leaving the cava, they each divide into two branches; one named *iliaca externa*, or anterior; the other *iliaca interna*, or posterior: the external is also simply named *iliaca*, the internal is called *hypogastrica*. They run the same course as the arteries of the same name. For the iliac vessels in the horse, see Plate XV. and the explanation of the parts composing "*the trunk*," under HORSE.

ILIACUS, from the os ilium. See ILIAC MUSCLE.

ILIACUS EXTERNUS MUSCULUS, *i. e.* PYRIFORMIS.

ILIACUS INTERNUS, a muscle which lies upon the concave part of the ilium, and takes its origin likewise from the anterior edge of the bone; it runs down before the psoas muscle, and makes one mass with it; they then run over the head of the bone, and pass inwards, to be inserted into the little trochanter.

It helps to lift the thigh upwards. See Plate XV. with the explanation of parts in the "*lower limbs*," under the article HORSE.

ILIUM INTESTINUM (from εἰλεω, *circumvolvo*, to roll about); because the gut which is principally called by this name is long, and lies in folds towards the bottom of the abdomen, and therefore gives many of the adjacent parts these appellations.

ILIUM OS. See BONES; also Plate V. and the description of bones "*in the pelvis*."

ILLEGITIMATE (νόθος), a term frequently used in the same sense as spurious, or irregular; as when a disease changes its appearance from the usual course, so that no certain judgment can be made of it; as in a *peripneumonia notha*.

IMBECILITY (from imbecilitas, *weakness*), a state of languor or decay, wherein the body is not able to perform its usual exercises or functions.

IMBIBE (from imbibo, *to drink in*), a term used commonly in the same sense as absorbent, when a dry porous body takes up one that is moist.

IMMERSION (from immergo, *to dip*), the sinking of any body in a fluid; which every body will do that is specifically heavier than the fluid, and the celerities of their descents will be in proportion to the excess of gravity. See BALNEA. Chemical immersion is a species of calcination, and is when a body is immersed in any fluid, in order to be corroded. Or it is a species of lotion, as when any part or substance is plunged into a fluid, in order to deprive it of a bad quality, or to communicate a good one to it.

IMPASTATION, the making of dry powders into paste, by means of some fluid.

IMPERVIOUS (from *in*, the negative sign, *per*, *through*, and *via*, *a way*), such a closeness of pores, or particular configuration of parts, as will not admit any thing through.

IMPETIGINES, disorders in which the skin is affected with defecations or blotches. In Dr. Cullen's Nosology, it is the name of an order in the class *Cachexiæ*.

IMPETIGO, is a cutaneous foulness, divided into many sorts by the ancients: but a better knowledge in secretion, and the office of the cutaneous glands, has taught us the cure of all such disorders, without having any necessary recourse to such distinctions; the itch and leprosy taking in the several kinds, from the most easy to the most obstinate degree of infection, according to which the means of cure are proportioned. Dr. Cullen ranks the impetiginous diseases as an order in the class *Cachexiæ*, and



defines the impetigines to be those disorders from a general bad habit, which manifest themselves principally by disfiguring the skin and other external parts of the body. The itch, &c. though affecting the skin, yet not being connected necessarily with the habit, Dr. Cullen places in the class *Locales*.

IMPETUS, a term which has been variously used by physical writers; but now obtains more commonly in mechanics, to express the blow or force with which one body strikes against another. Physicians speak of the *impetus* of the circulation when the blood is urged on with extraordinary force.

IMPLUVIUM, an embrocation.

IMPOSTHUME, a collection of matter or pus in any part, either from an obstruction of the fluids in that part, which makes them change into such matter, or from a translocation of it from some other. See Pus.

IMPOTENCE, is the want of any power; but generally applied to an insufficiency in the male to impregnate the female.

IMPREGNATION, is caused by the emission of the male seed in coition, by which the female conceives, or becomes with young. It is also hence figuratively used in pharmacy for the saturating one body with another; as any menstruum is said to be impregnated with a body that is dissolved in it, as much as its pores are able to receive.

IMPULSE, a term used in the same sense as IMPETUS, which see.

IMUS VENTER, the abdomen; but sometimes it means only the hypogastrium.

INAPPETENCY, a want or loss of appetite.

INCARNING (from *in*, and *caro*, *flesh*), the healing or filling up ulcers and wounds with new flesh; and the medicines which effect this are commonly called *incarnatives*.

INCIDE (from *incido*, to cut). Medicines are said thus to act which consist of pointed and sharp particles, as acids, and most salts; by the force or insinuation of which the particles of other bodies are divided from one another, which before cohered: and thus some expectorating medicines are said to incide or cut the phlegm, when they break it so as to occasion its discharge.

INCINERATION (from *in*, and *cineres*, *ashes*), the reduction of any body into ashes by burning.

INCISORES. See the article AGE of a Horse.

INCISORES INFERIORES COWPERI. These muscles arise from the alveoli of the lateral incisores of the lower jaw, and are inserted

into the middle of the semiorbicularis of the lower lip.

INCISORES LATERALES, a sort of biceps-muscles, which unite into one at the lower end; they arise from the os maxillare, below the middle tendon of the orbicularis palpebrarum, and below the edge of the orbit in the os maxillare, near the union of this bone with the os malæ: these two portions (on each side) unite about the lateral dentes incisorii.

INCISORES MEDII, also called *incisores minores Cowperi*, or *incisores minores superiores*. They are two small short muscles, situated near each other below the septum narium; they rise from the os maxillare, on the alveoli of the first incisores, and are inserted into the middle and upper part of the upper lip.

INCISORII DUCTUS. These are two canals which go from the bottom of the internal nares, across the arch of the palate, and open behind the first and largest of the dentes incisorii: their lower orifices are in the foramen palatinum anterius.

INCITABILITY (from *incito*, to stir up to action). In a practical view, it has appeared necessary to make a distinction between this term and *irritability*; because, though it is allowed, that to these two powers the existence of the machine in a living state, and the action of its moving solids with respect to their continuance, are entirely owing; yet they do in some degree certainly exist independent of each other, notwithstanding their intimate union and conjunct action. It is therefore by this knowledge that we shall in some cases be able to discover how, from particular defect in these two powers, separately attended to, diseases put on different appearances, and are to be prevented, alleviated, or cured, by applications made to them distinctively, as well as unitedly. Thus then are they discriminated. By *incitability* is meant that power in the brain, and nervous system, which may be put into action by mental affection, as well as local irritation, and which produces those affections we call sympathy. By *irritability* that power is meant which may be put into action by material stimulus, locally exerted; yet is obedient to the influence of the nerves in general, and cannot in the living machine exist for any considerable time without this union.

INCLINATION, is when a clear liquor is poured off from some fæces or sediment, by only leaning the vessel; which is also called *decantation*. This term is also used in physics, to express the mutual approach or tendency of two bodies, lines, or planes, towards one an-

other; so that their directions make either a straight line at the point of contact, or an angle of a greater or lesser magnitude.

**INCONTINENCY**, is said of such natural discharges as are involuntary through weakness, as of an involuntary discharge of urine, semen, &c.

**INCORDING**, in a horse, the same as rupture. See RUPTURE.

**INCORPORATION** (from *in*, and *corpus*, a body), embodying; the mixing of particles of different bodies together, so as to appear an uniform substance, or composition of the whole, without discerning the ingredients, or bodies mixed, in any of their particular qualities.

**INCUBUS**, called also **ASTHMA NOCTURNUM**, the *night-asthma*, and *night-mare*, because there seems a weight upon the breast, as if somewhat rode upon it. The causes are nearly the same as in a humoral asthma, and the same means of cure are practised. See NIGHT-MARE.

**INCURVATION**, the bending a bone, or any other body, from its natural shape.

**INCUS**. See EAR.

**INDICATION**. The medical treatment indicated is, that which is directed to be done in any disease. Indication is of four kinds, vital, preservative, curative, and palliative. It directs what is to be done to continue life; removes the cause of an approaching distemper; cures it when it is actually present; or lessens its effects, by taking off some of its symptoms, before it can be wholly removed.

**INDICUM LIGNUM**, logwood.

**INDIGNATORIUS MUSCULUS**; a muscle is thus called which is supposed to draw the eye from its inner corner outwards, which gives an appearance of anger; but that is properly a compound motion of two muscles.

**INDURATION** (from *durus*, hard), that change in a body by which it becomes harder or firmer than natural in its consistence. Thus a tumour is indurated either by the addition of solid particles, as in scirrhi and glandular swellings, or else by transpiring its thinner parts through the skin.

**INFECTION** (from *infectio*), the communicating a disease by some effluvia, or particles which fly off from distempered bodies. These, mixing with the juices, occasion the same disorders as in the bodies they came from. See CONTAGION and EPIDEMIC.

**INFERNALIS LAPIS**, a very powerful caustic, prepared in the following way, under the college name of

*Pure Kali.*

Take of the water of pure kali (see KALI), one gallon :

Evaporate it to dryness; afterwards melt it by fire, and let it be poured off into moulds of a proper shape, so as to form sticks or rolls of a convenient length.

This caustic has a disposition to liquefy, which renders the application very inconvenient; to remedy which some use an addition of powdered quick-lime.

**INFIRMARY**, a place where sick persons are taken care of, either for nursing or cure. Infirmaries for horses are become common in many of the large towns in England. The VETERINARY COLLEGE in London has an infirmary, to which the subscribers have the privilege of sending their sick horses, only paying for their keep during their stay. See VETERINARY COLLEGE.

**INFLAMMABLE AIR**, i. e. *hydrogene*. See the articles GAS and HYDROGENE.

**INFLAMMATION** (from *inflammo*, to burn); also PHLOGOSIS PHLEGMONE. Hippocrates often applies the word *phlegma* in this sense: it is properly defined to be an increased circulation in any part, from irritation, external or internal, local or universal.

The *immediate cause* of inflammation is irritation. It does not depend on the quantity of crassamentum, nor the ardency of the blood: spasm and inflammation mutually produce each other. Putrid matter is amongst the varieties which irritate the nervous and sensible parts, and so excite inflammation. The kinds of irritation are, perhaps, as various as are their different causes. More fluid circulates through, and more is secreted, in a part that is inflamed, than when it is in a natural state. Sensibility and irritability are increased by inflammation, and are produced in parts that did not manifestly possess them before.

The *mediate cause* of inflammation is the increased sensibility or irritability of the fibres; whence irregularity in the excreta and retenta.

The *remote causes* are wounds, bruises, sudden and excessive cold, luxations, aromatic aliments, &c. Dr. Cullen considers spasm as the sole proximate cause of inflammation, and says, "that a spasm of the extreme vessels takes place in inflammation is presumed from what is at the same time the state of the whole arterial system. In all considerable inflammations, though arising in one part only, an affection is communicated to the whole system; in consequence of which an inflammation is readily produced in other parts besides that first affected. This general affection is well known to physicians under the name of *diathesis phlogistica*. It most commonly appears in subjects of the most rigid fibre, is



often manifestly induced by the tonic or astringent power of cold, increased by all tonic and stimulant powers applied to the body, always attended by a hardness of the pulse, and most effectually taken off by the relaxing power of blood-letting. From these circumstances it is probable, that the diathesis phlogistica consists in an increased tone or contractility, and perhaps contraction, of the muscular fibres of the whole arterial system."

Inflammations receive different names, according to the different parts on which they manifest themselves, as in the instances of a QUINSY, PLEURISY, &c. called *phlegmonous inflammations*; and a CATARRH, DIARRHŒA, &c. called *inflammations of the mucous membrane*.

However various may be the divisions and subdivisions of inflammation, like fever, they are all but inflammation, differently circumstanced. If the sanguineous vessels in those membranes that are inflamed are the seat of the irritation (as in inflammations of the stomach, brain, &c.), the inflammation is then called *phlegmonous*; but when the irritation is on the surface of the membranes, it stimulates the secretory mucous glands to the accumulating and discharging more than in a natural state they usually do. So an irritation, and its consequent, an extraordinary afflux or circulation of humours through the part, constitutes inflammation in both cases.

All the inflammations that come under the name of *phlegmonous* have the same seat: they are all in the sanguinary arteries of the part inflamed. Boerhaave, to support his doctrine on this kind of inflammation, speaks of the red blood being obstructed by an error of place (see ERROR LOCI); but obstruction is not a cause, though it may be an effect, of this disorder. The mucous membrane is the seat of those inflammations which come under the denomination of *inflammations of the mucous membrane*. If there are tumours, the inflammation is either *phlegmonous* or *erysipelatous*. The seat of the *phlegmonous* is in the sanguinary arteries and the cellular membrane; the seat of the *erysipelatous* is in the skin, or other internal membranes not cellular.

Dr. Cullen uses the term *phlogosis* for this genus of disease. He places it in the class *Pyrexia*, and order *Phlegmasie*; and defines it to be a fever, redness of an external part, with heat, and a painful tension. The species he points out are, 1. *Phlogosis phlegmone*, the *phlegmonous inflammation*. This is attended with a bright redness, a circumscribed tumour, most frequently elevated, and terminating in a point,

often suppurating, and is attended also by a throbbing pain. It puts on different forms, and in different situations; hence its two varieties. 2. *Phlogosis erythema*, erythematous inflammation. This has for its associates a red colour, disappearing on pressure; its extent is not circumscribed, but irregular, and spreads; there is scarce any perceptible tumour; it produces scales at the cuticle, phlyctenæ, and small blisters, and there is also a burning heat attends. Of this there are three varieties; proceeding, 1st, from its degree of violence; 2d, remote cause; 3d, from its being complicated with *phlegmonous inflammation*, œdema, or being symptomatic. This species sometimes is but slight, appearing on the skin without the person being sensible of any other disorder, and it most commonly breaks out on the face, or one leg. This complaint increases for two or three days, continues at its height one or two, then abates, and terminates in large cuticular scales, which fall off.

The consequences which frequently succeed *phlogosis* are, 1. *Abcess* (see ABSCESS); 2. *Gangrene*; and, 3. *Sphacelus* (see MORTIFICATION). They are known by the following appearances: In the *first*, after inflammation has taken place, and continued some time, the pain and pulsation in the part remit, the tumour becomes whitish and soft, manifesting a sense of fluctuation on being pressed; and is attended with an itching or rather pricking pain. In the *second*, after inflammation, the part becomes livid, soft, has little sensibility, and is often attended with ichorous vesicles. And, in the *third*, after a gangrene has come on, the parts grow black, flaccid, are easily lacerated, without sense or heat, and have the fœtor of putrid flesh, the disease spreading very rapidly.

The *principal effects of inflammation* are, heat, pain, swelling, redness, an accelerated pulse, a dryness of the skin, and an itching. The *heat* is excited by the reciprocal action and reaction of the solids and fluids. The irritation on the fibres increases the action of the vessels; the velocity of the fluids is thereby quickened through them, and thus heat is excited in proportion as there is crassamentum in the blood. *Pain* is excited by the distension of the vessels in a part already become preternaturally sensible. *Swelling* is not caused by obstructed blood, but by the excess of heat distending the cellular membrane; but a swelling is not essential to an inflammation. *Redness* proceeds from the quantity of blood brought to the part; but is not to be distinguished in brutes as in the human subject. The *quickened pulse* proceeds from that

law in nature, by which the heart always increases its efforts to free its subservient vessels from any injury they sustain from accidental or preternatural irritation. *Dryness of the skin* arises from the stricture of the capillaries, whose use is nearly abolished by the irritation on them. *Itching* is but the beginning of what ends in pain by its increase; the latter, however, cannot be ascertained in dumb animals, though it may be presumed, as are some other of the foregoing circumstances, on the ground of analogy.

The prognostics are more or less favourable in proportion to the immediate importance of the part affected, the constitution of the patient, the intenseness of the symptoms, and the co-attendance of other disorders. In a part that is of a firm texture, and that has but few vessels, such as the ligaments, glands, &c. the treatment is often tedious, and a proper cure not always effected, for a scirrhus is sometimes the consequence. If the symptoms of inflammation cease suddenly, the epidermis is raised into blisters full of ichor, or sinks, and the colour of the part becomes livid, whilst, at the same time, the pulse is small, and the sensibility of the part is lessened: a gangrene is then approaching.

Sometimes an inflammation soon goes off, at others it is removed with difficulty, and often it terminates in other diseases. In the horse, and other large quadrupeds, its progress is exceedingly rapid; for which reason the most decisive and speedy remedies are called for, especially in all *internal* inflammations. An inflammation can only terminate by a removal of its immediate cause, viz. the erethism of the vessels, or rather of the matter. Its general terminations are in *resolution*, *suppuration*, *gangrene*, or *scirrhus*; though, with respect to the last, practitioners are not agreed.

1. *Resolution* is said to be accomplished when, upon removing the cause, the symptoms diminish gradually, and at last the patient is in the same state as before the disorder began. And, unless morbid matter was the cause, this is the most desirable way of termination. A resolution may be brought about by some increased evacuation happening by nature's efforts, or by those of art; a fever coming on; or by a metastasis. But these are not properly the modes of the resolution of inflammation, but the methods which nature or art has taken to remove the irritation which was the immediate cause. In all these species of resolution indurations are sometimes left.

2. *Suppuration* is more properly a consequence

of inflammation than a mode of its termination. It happens when a quantity of blood, thrown out into some cavity, is converted into pus, and afterwards so acts on the solid parts as to convert them into a matter similar to itself, the symptoms of inflammation going off.

3. *Gangrene* may be a consequence of inflammation, but never can be considered as the mode of an inflammation going off: for now sensation is destroyed, and life, with respect to the part that mortifies, is extinguished; whence no morbid cause can any longer be productive of effects.

*Lastly*, a *scirrhus* is generally mentioned as a fourth termination of inflammation; but not without evident impropriety, since it seldom or never occurs but in cases where it is the *forerunner*, and not the *consequence*, of an inflammation; the tumour generally appearing before the discolouration and other phlegmonous symptoms.

One general method of cure is that which is proper in all the denominations of phlegmonous inflammation, however distinguished by particular names. In general there are but *two indications*; the *first*, to lessen or remove the irritation; the *second*, to abate the increased afflux of the humours.

Though inflammations of all parts have the same general treatment in order to their cure, yet regard should be had to the structure, situation, and connection of the parts; to the antecedent causes of the disorder, and the constitution of the patient.

It is observable, that a phlegmon, on its decline, assumes successively the forms of an erysipelas and œdema, and then it vanishes: this would not happen so soon if they proceeded from inspissated blood, serum, or lymph, wedged in smaller vessels than they are destined to circulate through; whence, as these different appearances of inflammation are known to arise successively in the same place, it seems very certain that they proceed from the same cause, viz. from the same kind of irritation in the same series of vessels; and that they are nothing else but the different degrees of intensity of the same disease, also that the same general method of cure is proper for them all.

*To remove the irritating cause*, 1. Endeavour to remove all that can continue the morbid irritation. 2. When spasms are the cause, opium is the properest remedy. 3. When a stimulating fluid is secreted on a sensible membrane, its action may be hindered by the application of oily, unctuous, or mucilaginous matters. The morbid acrimony may be destroyed by proper alter-



atives, or mercury, &c. 4. Destroying or lessening the irritability of the part, is by means of bark internally, and preparations of lead externally. 5. The distension of the internal vessels is removed by restoring the circulation on the external surface of the body, or giving internally medicines to relax the small vessels throughout the system, by their action on the stomach; such as nitre, sal ammoniac, all the neutral salts, antimonial preparations, cold water, external applications, &c.

We may *abate the increased determination of the humours*, 1. by bleeding; 2. purging with neutral salts; 3. by the application of sedatives to the stomach, and narcotics given at proper intervals; 4. topical sedatives, such as the preparations of lead, &c.; and, 5. by inflammation excited on the skin, near the part originally affected (except the skin itself is the part inflamed). To this end friction with spirit of turpentine (which powerfully stimulates the skin in brutes, though it has little effect on the human skin), the volatile liniment, blisters, or even the actual cautery, may be applied. Meanwhile, a cooling diet should be directed: copious draughts of water-gruel, bran-infusion, or barley-water, are among the first articles of diet in inflammations.

If an external inflammation can be removed without a suppuration, emollients should never be applied; they increase every degree of tumour, by adding to the quantity of fluids in the part. The increased action of the vessels is to be allayed, and the sensibility of the part abated, by such sedatives as neither increase the tumour, the pain, the heat, nor the tension. To this end, saturnine topics, or, in their stead, the simple astringents and stimulants in common use, such as the usual mixture of vinous spirit with vinegar, possess the desired efficacy. Or,

Take of Alum, half an ounce;

Vinegar, one pint.

Mix.

This will stop the progress of external inflammation. When the seat of inflammation is a lax glandular part, applications that are strongly stimulant are the most safe and advantageous. And where there is but little sensibility in the part, as in tumours of the lymphatic glands, blisters exceed all other topical remedies.

The belly should be kept lax in all kinds of inflammations, and internal ones are much relieved by a frequent use of clysters. See PLEURISY, &c.

Vapours and fomentations contribute much to relief, by lessening the irritation of the fibres,

and by the motion of the blood being rendered more equable in the part.

Particular inflammations are treated of under the several heads of diseases which they constitute; or are noticed under the names of the parts which they affect. See INTESTINES, LIVER, &c.

INFLAMMATION OF THE LUNGS.  
See PERIPNEUMONY.

INFLATION, a blowing up or stretching or filling up any part with air. Thus the lungs are *inflated* when air is drawn into them in respiration.

INFLUENT, flowing together or into; a term which expresses any liquor or juice that, by the contrivance of nature and the laws of circulation, falls into another current or receptacle. Thus, with respect to the common receptacle, the chyle is its influent juice; and so is the bile to the gall-bladder, and the venous blood to the heart in its diastole, &c.

INFLUENZA, a disease of which most of us have experienced the effects in our own persons. It is a catarrh, arising from atmospheric contagion (see CATARRH). Its cause and diagnostic symptoms need no very particular description. It is generally, and not always without reason, supposed infectious, or communicable from one horse to another (see EPIDEMIC). Of this, however, Mr. John Lawrence says, he entertains some doubts; yet he prudently recommends the separating infected horses from those as yet unattacked by the disease. The treatment usual in catarrh, he says, must be persevered in, but with peculiar attention to warmth about the head and throat, and to cleanliness in respect to the discharge from the nose, which may be very copious. "Care," says he, "must be taken, in case of syringing the nostrils, that the membrane be not abraded with sharp and stimulating injections, that may induce purulent ulcerations, of worse consequence than the original disease. Should the fever be considerable, attended with little or no discharge from the nose, or retention of urine, and nature seem much oppressed, and unable to throw off the load at any outlet, antimonials and powerful diaphoretics are indicated. When the disease has taken this turn, the fever will sometimes run so high, that the flesh of the horse will feel burning hot, and he will refuse all sustenance, nor attempt to lie down until a critical discharge shall happen somewhere. This crisis may come in the form of hot watery eruptions or blisters, in tumours under the elbow or hock, or collections of water along the belly, near the inguinal glands, which farriers, who

usually confound cause and effect, denominate the water-farcy." Under these circumstances, Mr. Lawrence advises the practitioner merely to assist the efforts of nature by administering cooling diuretics, and, as occasion may require, opening clysters. Every fact relating to this disease in the horse seems, indeed, to countenance this advice; nor can there be required more copious instructions on this subject than appear in the articles referred to above, but particularly in the article EPIDEMIC, where various instances of the disease and its treatment are cited.

INFRA, within, or inner; an epithet applied to certain muscles, and denoting their situation with regard to others that are contiguous. As an example, see the *Infra-spinatus* scapulæ of the horse, in Plate XIV. and the description of muscles, &c. "*in the trunk*," under the article HORSE.

INFUNDIBULUM, a funnel: whence many parts in an animal body having a resemblance to it in shape are thus called; as the *infundibulum cerebri*, and *infundibulum renum*; and some parts of plants, for the same reason, are called *infundibuliformes*.

INFUSION, that part of pharmacy whereby the virtues of plants, roots, &c. are drawn out, by letting them steep only in some convenient menstruum, and this is employed on bodies of a laxer texture than those which require decoction, and whose parts are so volatile as not to admit of boiling, without hazard of their active properties being dissipated.

Water, the direct menstruum of gums and salts, extracts readily the gummy and saline parts of vegetables. Its action, however, is not limited to these: the resinous and oily principles being, in most vegetables, so intimately blended with the gummy and saline, as to be in great part taken up along with them: some of the resinous cathartics, and most of the aromatic herbs, as well as bitters and astringents, yield to water greatest part of their smell, taste, and medicinal virtue. Even of the pure essential oils and odorous resins of vegetables, separated from the other principles, water imbibes a part of the flavour; and, by the artificial admixture of gummy or saline matter, the whole substance of the oil or resin is made dissoluble in water.

Of pure salts water dissolves only certain determinate quantities. By applying heat, it is generally enabled to take up more than it can do in the cold, and this in proportion to the degree of heat; but, as the liquor cools, this additional quantity separates, and the water re-

tains no more than it would have dissolved without heat. With gummy substances, on the other hand, it unites unlimitedly, dissolving more and more of them till it loses its fluidity: heat expedites the action of the water, but cannot enable it to take up more than it would do, by allowing it longer time, in the cold. The active parts extracted from most vegetables by water, and oils and resins made soluble in water by the artificial admixture of gum, partake of this property of pure gums, being dissoluble without saturation.

It has been imagined, that vegetables in a fresh state, while their oily, resinous, and other active parts are already blended with a watery fluid, would yield their virtues to water more freely and more plentifully than when their native moisture has been dissipated by drying. Experience, however, shews, that dry vegetables, in general, give out more than fresh ones, water seeming to have little action upon them in their recent state. If, of two equal quantities of mint, one be infused fresh in water, and the other dried, and then infused in the like quantity of water for the same length of time, the infusion of the dry herb will be remarkably the stronger: and the case appears to be the same in all the vegetables that have been tried.

In the preparations by infusion, it is to be understood, that the subjects must be moderately and newly dried: unless when they are expressly ordered to be taken fresh; in which case it is to be judged that their virtues are destroyed or impaired by drying.

The natural colours of many vegetables are communicated to water along with their medicinal matter: many impart a colour different from their own; and others, though of a beautiful and deep colour themselves, give scarcely any to the menstruum. Of the first kind are the yellow and red flowers; of the second, the leaves of most plants; of the third, some of the blue flowers, as those of cyanus and larkspur. Acid liquors change the infusions of most flowers, the yellow ones excepted, to a red; and alkalies, both fixed and volatile, to a green.

From animal substances water extracts the gelatinous and nutritious parts, whence glues, jellies, broths, &c. and, along with these, it takes up principles of more activity, as the acrid matter of cantharides. It dissolves also some portion of calcined calcareous earths, both of the animal and of the mineral kingdom, but has no action on any other kind of earthy matter. But these, for the most part, require DECOCTION.



INGESTA, a term used for the various kinds of substances received as aliment into the stomach of an animal.

INGLUVIES, the gizzard of birds (see FOWLS); but it is also applied to an inordinate or voracious appetite. See APPETITE.

INGRAVIDATION, the same as impregnation, or going with young.

INGREDIENTS (from *ingredior*, to go in together), all the simples which go into the composition of any one medicine.

INGUEN, in man, reaches from the upper part of the thigh to above the genitals, and is commonly called the *groin*; and the term *inguinalis* is given to any subdivisions made of that part, any organisation of which the groin is the seat, or any thing affecting it, as a hernia, &c.

INION (*ινιον*), the occiput. Blancard says it is the beginning of the spinal marrow: others say it is the back part of the neck.

INJECTION (from *injection*, to cast or throw into), any medicine made to be injected by a syringe, pipe, or other instrument, into any part of the body.

INJECTION, a mode by which anatomical subjects are preserved from decay, and their parts exhibited for the purposes of illustration. This art is no less worth cultivating amongst scientific veterinarians than amongst those of the medical profession as it applies to the cure of human diseases. Injected preparations are either those of sound or of morbid parts. The former are of great use to the anatomical student, by shewing the course of the arteries, veins, lymphatics, &c. in their natural state; and the latter are still more important, as they enable us to judge of the changes which different parts of an animal undergo in a state of disease, and thus direct us to the proper method of cure. In every view, indeed, the art of making anatomical preparations by injection is of importance, and therefore we shall briefly avail ourselves, in this article, of such instructions as the best writers afford on the subject.

There are two modes of preserving anatomical subjects from putrefaction and the injuries of time, so as to exhibit the different parts of the animal body either in their natural or diseased state. These are either preserved in a *dry* or a *wet* state, *i. e.* immersed in ardent spirits.

Mr. Charles Bell, in his "*System of Dissections*," gives the following useful directions on the mode of making anatomical preparations by injection:

"To those," says Mr. Bell, "who are commencing their operations, small subjects will be

found the most convenient, being more easily managed, and not likely to embarrass the student with much confusion. Besides, his views at first should not be so immediately directed to practice; his object should rather be to acquire general ideas of the anatomy. Young subjects are likewise much fitter for injection (I mean for the injection of the arteries, and for minute injection): they are not only more easily heated and managed, but, what is of more consequence, their blood-vessels have an elasticity and strength which enables them to bear the push of the injection better, and, by a kind of elastic resistance, to give warning of the danger of rupturing their coats; while, in old bodies, the piston of the syringe goes easily down so far, stops, and, if forced, most probably bursts the vessels, driving the injection amongst the muscles, and giving much trouble in the dissection. When any of the trunks burst in this way, the tension being taken off, their coats contract upon the warm injection, and they remain half filled.

"In old subjects, this want of pliancy becomes very remarkable. There is often a kind of stiffness and rigidity, as if the coats of the vessels were corrugated; a degree of that state in which we find the arteries when ossified, or when concretions are formed in their coats.

"If only some coarse injection is, in a slovenly manner, to be thrown into the great vessels to shew their course, it does not much signify how it is done, or what injection is used, or what means are employed to facilitate the passage of the injection. But if the vessels are to be injected minutely, it is necessary previously to heat the subject well, by bathing it in warm water, or applying steam to the surface. This is of more consequence than even the choice of the subject; for, as the injection is intended to be penetrating and fluid when warm, and, upon becoming cold, to congeal and remain solid in the vessels, it is necessary that the vessels be heated, that they may not suddenly chill the injection: besides, this heating of the body softens and relaxes all the mass of flesh, and brings it to a more suitable state for admitting injection. But it ought to be remembered, that, if the parts be overheated, especially where the vessels to be injected lie exposed, there is danger of spoiling all, by corrugating their coats, and making them quite friable and tender. There is a better way still of heating the subject, viz. by heating the vessels themselves; and, indeed, the two methods should be always combined. The common practice in the injection of the great vessels is, to inject first equal parts of brown and white spirit varnish, co-

loured with the same paint that is used for the coarse or wax injection; and this fine varnish injection, being moderately heated, and thrown in before the wax injection, clears its way, and moderately heats the vessels, so that they do not readily cool or retard the wax injection which is to follow. But, when using minute injection (which is size coloured with vermilion), for the purpose of demonstrating the minute vessels, although the hard injection is thrown into the vessels after it, simply to stop the regurgitation of the warm and liquid size, and to retain it in the minutest extremities of the vessels, yet it infallibly happens that the wax injection runs more minutely in this way than in any other. This being the case, it will be found, in all cases, to be a better method to use painters' size, coloured with vermilion, and heated, but not so much as to crisp the vessels; and to throw it in before the coarse injection. It is the least expensive, runs more minutely, gives always a chance for beautiful specimens of minute injection, and can be pushed to any quantity, even till the skin of the limb becomes quite tense, without rupturing the vessels, or those vessels at least by which the coarse injection can escape. By this means the vessels are dilated, the limb made warm and moist, and the wax injection flows easily into the arteries, whilst the size escapes with the slightest pressure into the cellular texture.

"There are still other things which require attention, viz. the tying of all collateral vessels that may have been opened, and the fixing of the tube securely in the mouth of the vessel. When the injecting pipe is introduced into the vessel, it cannot be retained there by a simple knot, without a chance of its slipping off during the injection, or, if tied firmly, of cutting the coats of the vessel. Therefore, after the ligature is drawn upon the artery including the tube, the ends of the ligature should be brought over the wings of the tube, and then carried round, so as to include that part of the ligature which reaches from the mouth of the tube to the wing; and being tied there, the former knot is tightened, and the mouth of the artery drawn up upon the barrel of the tube.

"The coarse injection is composed of the following ingredients: bees wax, six ounces; resin, eight ounces; turpentine varnish, six ounces. The wax and resin give hardness and consistency, and the varnish is added to give it pliancy. These colours are generally used: vermilion, king's yellow, flake white, smalt, verditer, verdigrise, lamp-black. They should be

mixed with the turpentine varnish, and then added to the wax when melted; and, should there be occasion to melt the injection a second time, the heat must be cautiously applied, lest the colours should be burnt and destroyed. The injection should not be thrown into the vessels while too warm, for it will hurt their coats. The degree of heat should be such that the finger can be allowed to remain in it for a little while. A coarser composition can be made with tallow, wax, spirit of turpentine, and oil, coloured with the coarser paints; or, simply, tallow and red lead, when the parts are not to be preserved: and, for minute injection, turpentine, coloured with vermilion (which Haller preferred to all other injections for running minutely and without extravasation); painters' size, coloured with any of the above paints; or equal parts of brown and white spirit varnish.

"When delicate membranes are to be injected either with quicksilver or with fine size, instead of tying all the vessels by which the fluid may escape, I have found it necessary only to fear the edges of the membrane with a heated iron; or, after having fixed the tubes, the common method is to dry the edges all round, while the middle part is kept soft and moist. When it is required to demonstrate the vascularity of a part where there is no opportunity of injecting it, if membranous, the blood may be detained in the vessels by quickly drying and varnishing it. The blood, when extravasated, or when (as in the piles) preternaturally collected in vessels, may be coagulated by a solution of alum; or blood in inflamed parts may be coagulated by distilled vinegar. In other instances, or in preparations of the lacteals, their natural fluids may be coagulated and preserved by plunging them suddenly into strong spirits.

"There are many parts of the body which it is impossible to keep for any time in their original beauty, and these the most delicate and interesting; as the organs of the senses, and all minute nervous parts, the villi of the intestines, the comparative anatomy of insects, the incubated egg, &c. The ready demonstration of such delicate parts in the fresh subject is the truest test of the abilities of the practical anatomist; for there is more delicacy and nicety required in exposing these parts, and more real benefit to be derived from them, than in making the more lasting preparations. The minute structure of many of these parts must be dissected and unravelled under water, where the loose and floating membranes display themselves; while, out of the water, they would lie



collapsed and undistinguished. In such investigations, I have found nothing of so much service as jelly made strong and quite transparent. When a delicate part is completely dissected (suppose it to be the coats of the eye), place it in the jelly as it is becoming firm, and hold out the parts, and they will be retained, elegantly displayed either for demonstration or for drawing."

Some other observations on this subject, well worth the attention of students, may be found in Mr. Bell's publication, chap. 42.

Citizen Chaussier communicated to the Society of Medicine at Paris, a new method of preserving animal substances. After having enumerated the different methods employed for that purpose, he points out their defects and insufficiency. For preparing parchment, the skins are macerated in water, disengaging from them the unctuous particles, and dissolving likewise a part of the mucilage, so that nothing remains but the fibrous part. For tanning, the hides are put into lime-water, sulphuric acid, or into a solution of alkali, and afterwards exposed to the action of the *tannin* or tanning principle. For preserving anatomical preparations, they are generally put into alcohol, which dries them up, and entirely changes their proper form; and though they are in this way preserved from putrefaction, yet they do not remain untouched by the insects. The carbonat of soda, and the sulphat of iron, which are also used for keeping off putrefaction from animal substances, render them soluble in water, by combining themselves with the unctuous particles, and forming a soap with them, whereby the size and form of the preparations are considerably altered. In order to avoid all these inconveniences, Citizen Chaussier suffers the part intended for preservation to be macerated during a longer or shorter time, from three to eight or ten days, according to their respective size, in a solution of oxygenated muriat of mercury in distilled water. This liquor being always kept in a perfect state of saturation, by adding, from time to time, fresh muriat of mercury for that which is decomposed, imparts a great solidity to the parts impregnated with it, by giving consistency to the gelatinous parts, without changing their size and form; and, when exposed to the air for some time, they are secure from corruption and insects. It is through the medium of this mode of preparation that Citizen Chaussier has made several interesting observations on the structure of the brain, and particularly of the spinal marrow;

for he discovered that this part, after being deprived of its pia mater, is composed of six very distinct bundles: further, that all the nerves which arise from this part of the brain are by no means simple productions of its fibres, but that they are inserted in it like hairs, by means of bulbs which adhere to the medulla by several small roots; and, when these nerves are pulled out, a double row of small regular holes will appear to the eye, into which the bulbs are implanted. A portion of brain, presented to the Society by the inventor of this method, had the solidity of wood, without the least change in its natural size and form; another brain and spinal marrow, prepared in the same way, very distinctly shewed the holes into which the nerves were ingrafted. The celebrated Ruysch made also use of a liquor and of injections to preserve his excellent anatomical preparations, by means of which he had succeeded in preserving the body of his own daughter in the colour of life and freshness of youth. This liquor, which he always kept as a mystery, seems to be the same with that of Citizen Chaussier, or at least something analogous. According to Ruysch, it likewise made the gelatin solid, and by degrees as hard as wood; the albuminous matter coagulated by it, and the crystalline lens put into it, became opaque and white; the brain obtained in it a caseous and solid consistency. For colouring the injections, Chaussier advises to take madder or cinnabar; but never to make them of wax, or any other unctuous matter, but of a mucilaginous solution, as the solution of ichthyocolla, or isinglass. After having injected the parts, he directs them to be put into a solution of oxygenated muriat of mercury, where the matter for injecting concretes, and becomes solid. For preserving whole bodies, it is necessary to make openings into the great cavities, head, chest, and belly, large enough for the liquor to penetrate into them; as, without this precaution, the intestines will not be secured from corruption. Ruysch himself always made such incisions for the above purpose.

In *Anatomy* great improvement has been made by means of injections. Ruysch was the first who was eminent in their use. Rieger published Ruysch's method. The properties required in the injecting matter are, 1st, fluidity; but this alone is not sufficient: they must likewise, 2dly, grow stiff when cold, yet not so stiff but that they may remain tough and flexible; for, were they too hard, the smaller vessels would always be in danger of being broken. The following possess these properties: they

are the compositions of a celebrated anatomist, Dr. Nichols.

*Fine Injection.*

Take of Hard white Spanish varnish,  
Hard brown Spanish varnish, of each  
equal parts;  
Turpentine varnish,  
Vermilion, of each a sufficient quantity. Mix them.

*Coarse Injection.*

Take of Yellow resin, two pounds;  
Yellow wax, one pound;  
Turpentine varnish, a sufficient quantity.

These injections may be coloured with vermilion, indigo, blue, or with verdigrise. Whatever colouring matter is used, it must be ground extremely fine.

The fine injections, when used, should be as warm as they can be borne by one's finger, if dipped into it. The coarser sort should nearly boil.

The subjects to be injected, after having their vessels cleared of their contents, by squeezing out the juices, should be made warm, by being steeped in warm water.

A fœtus may be injected by the umbilicus; an infant subject by the aorta ascendens from the left ventricle; an adult may be injected in the same manner as the latter. Injection by the aorta does little more than fill the arteries; but, by the umbilicus of a fœtus, both arteries and veins are filled. When the arteries in the cornea are filled, the injection should not be pushed any longer. As soon as the injection is finished, put the subject into cold water, that it may cool suddenly.

The younger the subjects, the farther the matter will run in their vessels; and, if the body is macerated a day or two in cold water, before it is put into warm water, the blood will be more effectually dissolved, and the vessels more emptied, than by any other method. When put into warm water, it may continue thirty-six or forty-eight hours, the water being kept as hot as one can bear a hand in it.

To dry a preparation, hang it where a current of air passes freely, but guard it from dust; when dry, let it be well varnished. The shining varnish may be laid on it with a brush. Whilst it is drying, if maggots appear, wash the part with *hydrargyrus muriatus*, dissolved in spirit of wine.

The muriatic or nitrous acids, diluted, are

the best for macerating injected preparations in, when it is intended to remove by *corrosion* all but the wax figure of the vessels which compose the part. These, which exhibit the ramifications of the arteries and veins of any viscus, as the kidney, &c. in a very beautiful manner, are called *corroded preparations*. They should be mounted on pedestals, and kept under bell-glasses, to prevent injury.

Dr. Nichols considered the rectified spirit of malt as the best for preserving the different anatomical preparations, in a wet state.

Many anatomical subjects are preserved without injection: such are diseased bones of animals, the hoofs of horses, &c. These only require to be dried and varnished.

INNOMINATUM, or INNOMINATA, i. e. *without a name*. Many parts of the body are left under this indistinct term; as the *os innominatum*. See BONES and PELVIS.

INOCULATION, the grafting of one tree upon another; which is often so contrived as to have many different fruits proceed from the same stock, by grafting different slips into its several branches. But, in a medical sense, this term is almost wholly appropriated to the artificially communicating certain animal infections from one subject to another. This is usually performed by a slight puncture made with the point of a lancet, previously dipped in the matter to be conveyed. We do not know that brute animals are capable of being benefited by any process of this kind; but its prodigious advantages to man, in the case of the *cow-pox* (see that article), encourage the supposition, that even the inferior orders of animals may find in it a remedy for their diseases at some future period.

INOSCUATION (from *in* and *osculum*), a little mouth or orifice. See ANASTOMOSIS.

INQUIETUDE, the opposite to rest. It is caused by any uneasy sensation, from what cause soever, that prevents a person from being at rest or quiet.

INSECT, where *in* is taken positively, expresses such animals as are divided into, or incompassed with, rings or divisions, capable of being parted without utterly destroying life. Of these there are several kinds, and of which Aldrovandus has given descriptions; but, since his time, this has been much more accurately done by Swammerdam, in his *Historia Insectorum generalis*.

Insects differ from the higher classes of animals by their bodies being covered with a hard crust or scale, by their having feelers or antennæ arising from their heads, and many of them.



breathing the air through lateral pores. As to the shape of their bodies, though it somewhat differs from that of birds, being in general not so sharp before to cut and make way through the air, yet it is well adapted to their manner of life. The base of their bodies is not formed of bone, as in many other animals; but the hard external covering serves them for skin and bone at the same time. Their feelers, beside the use of cleaning their eyes, are a guard to them in their walk or flight. Their legs and wings are well fitted for their intended service; but the latter vary so much in different insects, that from them naturalists have given names to the several orders of the class. As,

1. *Coleoptera*, or beetle tribe, which have a crustaceous elytra or shell, that shuts together, and forms a longitudinal future down their back.

2. *Hæmiptera*, as in the cimex, cockroach, bug, &c. which have the upper wings half crustaceous and half membranaceous; not divided by a longitudinal future, but incumbent on each other.

3. *Lepidoptera*, as the butterfly, have four wings, covered with fine scales in the form of powder.

4. *Neuroptera*, as the dragon-fly, spring-fly, &c. have four membranaceous transparent naked wings, generally reticulated.

5. *Hymenoptera*, as wasps, bees, &c. have four membranaceous wings, and a tail furnished with a sting.

6. *Diptera*, as the common house-fly, have only two wings.

7. *Aptera*, as the lobster, crab, scorpion, spider, &c. have no wings.

The structure of the eye in many insects is a most curious piece of mechanism. The outer part is remarkably hard, to guard against injuries, and has commonly a reticular appearance, or the whole may be looked upon as an assemblage of smaller eyes; but whether they see objects multiplied before them has not yet been determined. Linnæus, and several others following him, deny the existence of a brain in these creatures. But it is certain, that at least a number of the larger kinds, as the lobster, crab, &c. have a soft substance similar to the brain, from which the optic and other nerves take their rise; besides, when this substance is irritated, the animal is thrown into convulsions: hence we would conclude, that insects have a brain as well as the other classes, although this is smaller in proportion to their bodies.

The ear has been lately discovered to be placed at the root of their antennæ or feelers,

and can be distinctly seen in some of the larger kinds, as the lobster.

They have a stomach, and other organs of digestion; and it is curious, that in some, as the lobster, the teeth are found to be situated in the stomach.

They have a heart and blood-vessels, and circulation is carried on in them somewhat as in the higher classes; but the blood is without red globules, or, as naturalists speak, is colourless. In the lobster, and others of the larger kind, when a piece of shell is broken, the pulsation of the heart is seen distinctly, and that sometimes for several hours after it has been laid bare.

The existence of lungs has by some been denied: but later experiments and observations shew, that no species want them, or at least something similar to them; and, in many insects, they are larger in proportion than in other animals: in most of them they lie in or near the surface of the body, and send out lateral pores or tracheæ, by which, if the animal is besmeared with oil, it is instantly suffocated.

With regard to *generation*, the same difference of sex exists in insects as in other animals, and they even appear more disposed to increase their species; many of them, when become perfect, seeming to be created for no other purpose but to propagate their like. Thus the silk-worm, when it arrives at its perfect moth-state, is incapable of eating, and can hardly fly; it endeavours only to propagate its species: after which the male immediately dies, and so does the female as soon as she has deposited her eggs.

Besides those of the male and female, a third sex exists in some insects, which we call *neuter*. As these have not the distinguishing parts of either sex, they may be considered as eunuchs or infertile. We know of no instance of this kind in any other class of animals; and it is only found among those insects which form themselves into societies, as bees, wasps, and ants; and here these eunuchs are real slaves, as on them lies the whole business of the economy. No hermaphrodites have as yet been discovered among insects.

Many have imagined, that the generality of insects were merely the production of putrefaction, because they have been observed to arise from putrified substances: but a contrary opinion is now more generally adopted; and it is quite certain, that, if putrid bodies be shut up in a close vessel, no insects are ever generated, unless their ova have been originally deposited there. They are oviparous animals, and lay

their eggs in places most convenient for the nourishment of their young; some in water, others in flesh; some in fruit and leaves, while others make nests in the earth or in wood, and sometimes even in the hardest stone. The egg in all insects first becomes (*larva*) a caterpillar, or maggot; from which the next change is into (*pupa*) a chrysalis, or aurelia, so named from its being inclosed in a case; and this dying, or seeming to die, the (*imago*) fly, or butterfly, or perfect state, succeeds; and, during each of these changes, the appearance differs wonderfully.

**INSPIRATION** (from *in* and *spiro*, to breathe in), that part of respiration which draws the air into the lungs. See **RESPIRATION**.

**INSPISSANTIA**, the same as **NUTRIENTIA**.

**INSPISATE**, to *thicken*, is when a liquid is brought to a thicker consistence by evaporating the thinner parts; and thus juices, as that of liquorice, are inspissated. It is usually effected by exsiccation. See **EXSICCATION**.

**INSTEP**, so some call that part of the hinder leg of a horse that corresponds to the shank in the fore legs, extended from the ham to the pastern-joint. It should be flat, and in a perpendicular line to the ground, when the horse is in his natural posture of standing.

**INSTINCT**, a natural disposition or sagacity wherewith animals are endued, and by virtue whereof they are enabled to provide for themselves, and know what is good for them, and are determined to preserve and propagate their species.

Instinct in brutes bears some analogy to reason in men. There have been many systems adopted to explain the principles which produce and direct the spontaneous actions of brute animals. Many of the ancient philosophers ascribed to brutes an understanding, differing only in degree from that of man, and attributed their inferiority to the want of proper and sufficient bodily organs. This system was at one time very strenuously supported by M. Helvetius (*De l'Ésprit*, tom. i. p. 2, &c.). On the other hand, the learned Cudworth endeavoured to explain the instinct of animals, by means of a certain plastic nature. Des Cartes thought that all the actions of brute animals might be explained by the simple laws of mechanism, and considered them as machines totally devoid of life and sentiment, but so curiously constructed by the Creator, that the mere impressions of light, sound, and other external agents, on their organs, produced a series of motions in them, and caused them to execute those various operations which had before been ascribed to an internal

principle of life and spontaneity. But the actions and manners of animals, which are totally incompatible with the mere principles and laws of mechanism, evince the absurdity of this opinion. M. Buffon adopts the opinion of Des Cartes in part, but grants them life, and the faculty of distinguishing between pleasure and pain, together with a strong inclination to the former, and aversion from the latter. By these inclinations and aversions he endeavours to account for all, even the most striking, operations of animals; affirming, that, in consequence of impressions made on the brain, by means of the sensitive organs, and by the re-action of the brain and nerves on the muscles, these machines acquire a motion conformable to the nature of the animal, and of the impressions of the different objects which act upon their organs, and excite desire or aversion.

The *pre-established harmony* of Leibnitz has also been applied to explain the actions of brute animals. Others have considered the actions of animals as produced by the constant and immediate influence of the divine energy, directing all their inclinations and motion: such appears to have been the opinion, however unphilosophical it must appear, of Mr. Addison, in the second volume of the *Spectator*. The late ingenious Hermann Samuel Reimar, professor of philosophy at Hamburgh, has enumerated and exposed these and other opinions with regard to the instinct of animals, in his *Observations Physiques*, &c. published in 2 vols. 12mo. at Amsterdam and Paris, 1770; and, defining *instinct*, in the most comprehensive sense of the word, to be every natural inclination, accompanied with a power, in animals, to perform certain actions, divides instincts into three heads. The first, which he calls *mechanical* instincts, belong to the body, considered as an organised substance, and are exercised blindly and independently of the will of the animal. Such are those which produce the motion of the heart and lungs, the contraction and dilatation of the pupil, digestion, &c. This class of instincts is possessed in common both by men and brutes, and in some measure even by vegetables. The second class comprehends those which he terms *representative* instincts, which consist partly in the power of perceiving external objects by their present impression on the senses, and partly in the faculty of rendering the ideas of these objects present to the mind by the powers of imagination, or of memory, in a *lax* sense of the word. These are common to men and other animals, excepting that brutes possess only the faculty of imagination in com-



mon with us, and not that of memory, in the strict and proper sense of the word. Indeed, this author endeavours to prove, that the knowledge of brutes does not merely differ in degree from that of man, but that it is of a kind entirely different from it, and that they are incapable both of memory and reasoning; the faculty of imagination serving to give them a confused idea of events that are past, by the view or other impressions of objects that are present. The third and principal class of instincts is that which comprehends all those which M. Reimar calls *spontaneous*. This species of instinct is not attended with any power of reflection, determining the animal to decide freely between two different modes of action present to his imagination; nor is it merely corporeal or mechanical. It is put into action by the natural and primitive principle of self-love, implanted in all animated beings; or by a love of pleasure and aversion from pain, producing a voluntary inclination to perform certain actions which tend to their well-being and preservation. To the performance of these actions they are particularly prompted by their present sensations, by imagination supplying the place of memory, and by other causes. The wonderful effects produced by these instinctive appetites are farther to be attributed to the exquisite mechanism in their bodily conformation, particularly in the structure of the various organs with which they execute their operations, and to the superior perfection and acuteness of their external senses, by which they are quickly and distinctly informed of those qualities of objects which most materially concern them. In order to account for the more curious and surprising operations of brute animals, M. Reimar adds two other principles, viz. 1st, an internal distinct perception of the precise power and proper use of their various bodily organs, together with an innate knowledge of the qualities of those objects around them in which they are interested; and, 2dly, certain innate and determinate powers and inclinations, impressed by the Author of Nature, *à priori*, on the soul itself, by which they are arbitrarily, and without their own knowledge or consciousness, directed and irresistibly impelled to the performance of these various operations which they execute with such unremitting industry and art. These determinate forces, which constitute the principal part of M. Reimar's system, are no-where so visible and distinguishable as in that numerous set of instincts which he classes under the title of the *industrious* instincts of animals. For a further account of this system we must refer to the

work itself, or to an abstract of it, with several of the author's illustrations, in the *Monthly Review*, vol. xlv. p. 533, &c.

**INSTITA**, a *fillet*; also a flat worm (the *tania*) in the intestines. Many brute animals are subject to this.

**INSTITUTIONS**, a system of laws or rules in any particular science: thus physical or medicinal institutions are such as teach the necessary *præcognita* to the practice of medicine, or the cure of diseases.

**INTEGUMENT**, a term used by anatomists to signify any common covering of the body, whether the cuticula, cutis, or the membrane of any particular part.

**INTERPERIES**, the same as a dyscrasy, or bad habit of body.

**INTENTION**, that judgment or particular method of cure which a physician forms to himself from a due examination of symptoms. In physics it signifies the increase of any power or quality, as remission is its decrease or diminution; and in metaphysics also it is used for the exertion of the intellectual faculties with more than ordinary vigour. It sometimes signifies either extension or indication.

**INTERCOSTAL** (from *inter*, *between*, and *costa*, *ribs*), any thing between the ribs: hence *intercostal arteries, veins, nerves*, &c. are those which branch between the ribs. See the anatomical plates annexed to the article *HORSE*, and their several explanations of parts which compose "*the trunk*."

**INTERCOSTAL MUSCLES**, the external and internal, which, in man, are forty-four in number, one of each sort being between every two ribs; they arise from the lower edges of each superior rib, and are inserted into the upper edges of each inferior rib. Their fibres decussate one another; those of the external run obliquely from the back part forward, but those of the internal from the fore part backward; they are thin and fleshy. For these in the horse, see Plate XIV. and explanation, under *HORSE*.

**INTERCOSTAL NERVES**. They are formed of some of the dorsal, and indeed of all the spinal nerves; also of branches from the fifth and sixth pairs from the brain. For the intercostal nerves in the horse, see Plate XI. and the explanation of parts composing "*the trunk*," under the article *HORSE*.

**INTERFERE**, or **CUT**. See the article **CUTTING**.

**INTERMISSION**, the interval betwixt two fits of any distemper.

**INTERMITTENT**, a cessation of any parti-

cular action for some time, and that time is called the *interval*. Thus, fevers which go off, and soon return again, as also any other diseases, are called *intermittents*, in opposition to those which are continued; and a pulse which, after so many strokes, stops, or loses one in its due time, is also thus called. See PULSE.

INTEROSSEI (from *inter*, *between*, and *os*, *a bone*). In the human subject, the muscles which move the fingers are thus called from their situation, being contained between the spaces of the bones of the metacarpus. Some reckon six of them, and others eight. The one half lie betwixt the spaces these bones leave towards the palm of the hand, and they are called *internal interossei*, arising from the upper part of the bones of the metacarpus next the carpus; and, being inserted on the internal sides of the first bones of the fingers with the lumbricales, they are the adductores digitorum, for they bring the fingers to the thumb. The other half are contained in the spaces that the bones of the metacarpus leave on the back of the hand: they rise from the upper part of the bones of the metacarpus, next the carpus, and they are inserted on the external sides of the first bones of the fingers; and these are the abductores digitorum, for they draw the fingers from the thumb. In the human feet, several small muscles fill up the four interstices between the metatarsal bones, much after the same manner as in the hand. Their use, with respect to the toes, is similar to that of the same sort of muscles in the hands. For examples of the *interosseus muscle* in the horse, see Plates XI. and XIII. with the explanation of parts in the "*lower limbs*," under the article HORSE.

INTERCEPTUM. The uvula, and the septum narium, have been so named.

INTERSPINALIS COLLI, two muscles that in part arise fleshy, and partly tendinous, from the spines of the loins, and the inferior part of the thorax, and are inserted into the fifth, sixth, and seventh spines of the thorax; these join the longissimus dorsi: on another part they arise from the superior parts of each double spinal process of the neck, except that of the second vertebra, and are inserted into the inferior parts of all the spines. These muscles draw the spines of the vertebræ nearer to one another.

INTERTRANSVERSALES MUSCULI. These lie between the transverse processes of the neck, serving to bend it to one side. They appear also in the loins. For these in the horse, see Plates X. and XIII.

INTERVERTEBRALES MUSCULI. These

arise from the body of one vertebra laterally, and are inserted, after an oblique progress, into the back part of the other vertebra, immediately above it. They draw the vertebræ nearer to one another, and a little to one side. For these in the horse, see Plates X. and XI. and the explanation of parts in "*the neck*," under the article HORSE. See also Plate XVII. and the explanation, under MUSCLES.

INTESTINES (from *intus*, *within*), those parts of an animal which are vulgarly called *the guts*. Both in brute animals and in man, from the pylorus to the anus there is one continued canal, and this is divided into the great and small intestines, which are furbelowed upon the mesentery and mesocolon. The whole length of the intestines, in the human subject, is between seven and eight times the length of the body; the small ones are about five parts out of the seven or eight, which is the length of the whole: in the horse, however, they are much longer in proportion. The small intestines are named *duodenum*, *jejunum*, and *ileum*, which see under the articles ABDOMEN, VISCERA, &c. Their distinctions are somewhat obscure, though generally marked out pretty nearly; the large intestines are, the *cæcum*, the *colon*, and *rectum*, which terminates the alimentary canal.

The first coat of the intestines consists of the peritoneum, which forms the external one; the second is the muscular coat, the third is the nervous or cellular, the fourth the villous. Some anatomists, however, describe only three coats as properly belonging to the intestines. The villi are of different shapes and lengths in different parts of the intestines, more thick in the small, more long and thin in the large ones; they are thought to be secreting and absorbing organs, as there the arteries terminate, and the veins begin. The glands of the intestines are supposed to be lodged in the cellular coat, next the villous.

In the great intestines we may observe little holes, which, when inflated, lead to cells analogous to the folliculi of Malpighius. The use of these is to separate a lubricating mucus, for facilitating the passage of the fæces.

The arteries and veins run together on the intestines.

The use of the intestines is, after digestion has been performed in the stomach and duodenum, to strain the chyle, and carry off the fæces by the anus; which are performed by the peristaltic motion, caused by their muscular coat.

The peristaltic motion of the intestines is not constant, but takes place on proper occasions,



or as these bowels are stimulated by their contents. The action of the lungs on the diaphragm, and the action of the abdominal vessels, conduce in some degree to the progress of the aliment; and the bile excites occasionally the peristaltic motion, and aids the descent of what is to be ejected.

The intestines are subject to various diseases; but the most important, as they affect the horse, and other species of cattle, are those of the acute kind, particularly the gripes or colic (see COLIC), and ENTERITIS, or inflammation of the bowels, which, as it deserves to be well understood, we shall describe as it affects the human subject, most of the leading circumstances being precisely applicable (where they can be discovered in beings incapable of describing their sensations in language) to brute animals.

This genus of disease is defined by Dr. Cullen a *typhoidal pyrexia*, attended with pungent tenfivè pain of the abdomen, running round the umbilicus, and attended with a vomiting and obstinate constipation. He distinguishes two species: 1. the *phlegmonodea*; inflammation of the bowels, with acute pain, strong febrile affections, vomiting, and costiveness: 2. the *erysipelatoza*; inflammation of the bowels, with pain and fever, more mild than the former, without vomiting, and an attendant diarrhoea.

It is the inflammation of the exterior coats of the intestines that is here treated of: it differs greatly from an inflammation of the inner vilous coat, or mucous membrane, in which case there is either aphthæ or a dysentery. According to the different parts of the intestine in which the inflammation is seated, different names have been given, as *iliaca passio*, *enteritis*, &c. but in all the treatment is the same.

If a sharp pain, with a fever and nausea, is above the navel, and below the stomach, the colon under the stomach is the seat of the inflammation. If the pain is in the right hypochondrium, under the spurious ribs, then that part of the colon which joins the ilium may be inflamed. If the pain is in the middle of the belly, about the navel, the small guts are affected.

The cause may be, external cold, indurated feces, heavy or hard bodies lying in the intestines, introfusions, adhesive stimulants, hernias, wounds, or any other cause of internal inflammation.

The usual symptoms are, a shivering, and acute burning pain in the belly, which is fixed in the part where it was first perceived; sometimes it increases a little, and then remits, but most frequently it is continually the same. Generally

the whole belly is affected at the same time with spasmodic pains, which extend to the loins; and flatulencies are often troublesome. The pulse is small, hard, frequent, and often it becomes at last irregular and intermittent. There is a coldness in the extremities, also a sudden and great prostration of strength. Sometimes a watery diarrhoea attends, but more frequently the muscular fibres of the inflamed part contract so strongly, that nothing can pass through, although a motion returns very frequently; sometimes the anus is so contracted that a small pipe can hardly be introduced. Flatulencies in the stomach, sickness, violent retchings, and vomiting, frequently attend. The tongue is dry, thirst great, the urine often pale and obstructed; sometimes it is high-coloured, and discharged with heat and difficulty. The breathing is quick. The patient bends forwards, frequently compresses his belly, because the abdominal muscles are spasmodically contracted. The face is flushed. At length a delirium comes on, and convulsions, by which the patient is destroyed.

Inflammation in the bowels frequently terminates in a mortification: in which case the pain goes off, and the patient appears to himself for a little relieved; his face grows pale, the under eye-lid becomes livid; but the pulse continues frequent, small, and often irregular; the extremities are cold; delirium and convulsions now come on, and carry the patient off. Just before he expires, it often happens that he discharges very fetid stools.

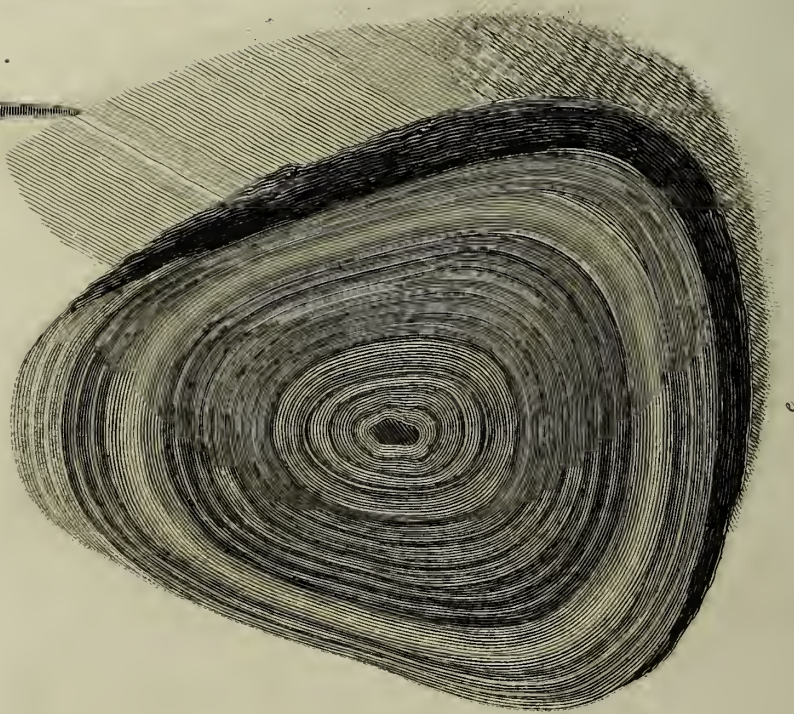
If this disorder is left to nature, it sometimes kills in a few hours, and almost always before the end of three days; so that there is rarely a suppuration. But, if an abscess is formed, the pain abates, and is converted rather into a sense of distension; and irregular cold fits, with the other symptoms of internal suppuration, arise; the contraction of the muscular fibres of the intestines, the great frequency of the pulse, and other symptoms, go off. When this abscess bursts, the patient swoons, and seems freed from a sense of weight in the part where it was.

Inflammation in the external membrane of the intestines should be distinguished from the stone in the kidneys, or in the ureters; from inflammation of the kidneys (see KIDNEY), or other of the abdominal viscera; from spasmodic pains of the belly, and from other obstructions there, in which no inflammation attends. It should also be carefully distinguished from the colic, (see COLIC), and from all other diseases which have in common any of the symptoms which characterise it.





*Horse-Shoe Nails.*



*Intestinal Calculus in the Horse.*



The treatment of enteritis in brute animals is limited to that of inflammation of other internal parts, as the pleura, kidney, &c. allowing for points of difference which arise from difference of situation, and which will naturally occur to the veterinary practitioner. See INFLAMMATION, PLEURISY, KIDNEY, &c.

INTESTINAL (from *intestina*, *intestines*), whatever is belonging to, or proceeding from, the bowels. Thus,

INTESTINAL CALCULI, are solid or stony accumulations in the intestines, forming masses, generally of an uniform shape, except where more than one are formed, and lie in contact with each other. This last gives them the form exhibited in Plate XVI. where *a* is the calculus entire, and *b* a section, shewing its laminated structure. The history of this production is given under the article CALCULUS.

INTRASPINALES. See INTERSPINALES.

INTRATRANSVERSALES. See INTERTRANSVERSALES.

INTROSUSCEPTION, a preternatural ingression of one portion of an intestine into another, or a reduplication of an intestine.

INTUMESCENCE (from *intumesco*, to swell up), that which constitutes any tumour or swelling.

INTUMESCENTIÆ (from *intumesco*, to swell), disorders attended with a puffiness, or with a swelling of the body, or of a considerable part of it. It is the second order of the class *Cachexiæ* of Cullen's *Genera Morborum*, which he defines the whole or great part of the body swelled externally.

INTUSSUSCEPTION, *i. e.* INTROSUSCEPTION.

INULA, *elecampane*, a genus in Linnæus's botany. He enumerates twenty-nine species, beside varieties. See ENULA.

INUNCTION, the action of anointing, or the materials with which a part is anointed.

INUSTION, a term sometimes used by old writers for hot and dry seasons; but most commonly by surgeons for the operation of the cautery.

INVALESCENTIA, and INVALETUDO, where *in* is taken privatively, is the want of health; whence *invalid* is one disabled by sickness from service.

INVOLUCRA, the secundines; so called from their enveloping the young animal. They form an universal covering for the fœtus, and the water in which it floats, during pregnancy.

INVOLUCRUM, any common covering of

particular parts in a body; whence involucre of the heart is the PERICARDIUM, which see. Involucrum, among botanists, denotes the calyx of an umbel.

INVOLUNTARY, is said of any natural excretion, which happens through weakness or want of power to restrain it; as also of all convulsive motions where the muscles are brought into action, without the consent of the mind.

IPECACUANHA (the *psychotria emetica* Linn.) a root brought from the Spanish West Indies. It is described to be of two sorts, Peruvian and Brazilian; but the eye distinguishes three, ash-coloured or grey, brown, and white. The ash-coloured, or Peruvian ipecacuanha of the shops, is a small wrinkled root, bent and contorted into a great variety of figures, brought over in short pieces, full of wrinkles and deep circular fissures, quite down to a small white woody fibre that runs in the middle of each piece. The cortical part is compact, brittle, looks smooth and resinous upon breaking. It has very little smell; the taste is bitterish and subacid, covering the tongue, as it were, with a kind of mucilage. The brown is small, and somewhat more wrinkled than the foregoing, of a brown or blackish colour without, and white within: this is brought from Brazil. The white sort is woody, has no wrinkles, and no perceptible bitterness in taste. The first sort (the ash-coloured or grey ipecacuanha) is that usually preferred for medicinal use. The brown has been sometimes observed, even in a small dose, to produce violent effects on the human stomach. The white, though taken in a large one, has scarce any effect at all. Mr. Geoffroy calls this sort *bastard ipecacuanha*, and complains that is an imposition upon the public. Botanists have differed as to what species of plant the ipecacuanha belongs. Geoffroy, Neumann, Dale, and Sir Hans Sloane, inform us, that the roots of a kind of apocynum (dog's bane) are too frequently brought over instead of it; and instances are given of ill consequences following from the use of these roots. If the marks above laid down, particularly the ash-colour, bitterness, deep wrinkles, and subacid taste, be carefully attended to, all mistakes of this kind may be prevented.

Ipecacuanha was first brought into Europe about the middle of the last century, and an account of it published about the same time by Piso; but it did not come into general use till about the year 1686, when Helvetius, under the patronage of Lewis XIV. introduced it into



practice. To man, this root is one of the mildest and safest emetics we are acquainted with; and has this peculiar advantage, that, if it should not operate by vomit, it passes off by the other emunctories. It at first had the character of an almost infallible remedy in dysenteries and other inveterate fluxes, as also in disorders proceeding from obstructions of long standing; nor has it lost much of its reputation by time.

Its effects on brute animals have not, however, been ascertained. Gibson rejects it from his *Farric's Dispensatory*, probably on account of the horse not being capable of the act of *vomiting*; but we see no reason, on that account, why it should not be tried by veterinary men, in the course of their practice, in such cases as its known qualities may seem to indicate.

In human diseases, this root, given in substance, is as effectual, if not more so, than any of the preparations of it. The pure resin acts as a strong irritating emetic, but is of little service in dysenteries; whilst an extract prepared with water is almost of equal service in these cases with the root itself, though it has little effect as an emetic. Geoffroy concludes hence, that the chief virtue of ipecacuanha in dysenteries depends upon its gummy substance, which lining the intestines with a soft mucilage, when their own mucus has been abraded, occasions their exulcerations to heal, and defends them from the acrimony of the juices; and that the resinous part, in which the emetic quality resides, is required, where the morbid matter is lodged in the glands of the stomach and intestines. But if the virtues of this root were entirely owing to its mucilaginous or gummy part, pure gums or mucilages might be employed to equal advantage. Water, assisted by a boiling heat, takes up from all vegetables a considerable portion of resinous along with the gummy matter. If the ipecacuanha remaining after the action of water be digested with pure spirit, it will not yield half so much resin as at first: so that the aqueous extract differs from the crude root only in degree, being proportionably less resinous, and having less effect, both as an emetic and in the cure of dysenteries. The virtues of ipecacuanha in this disorder depend upon its promoting perspiration, the freedom of which is here of the utmost importance, and an increase of which, even in a healthful person, is generally observed to suppress the evacuation by stool. In dysenteries, the skin is for the most part dry and tense, and perspiration obstructed;

the common diaphoretics pass off without effect through the intestinal canal: small doses of this root have been administered with the best effects, proving both laxative and diaphoretic; but ipecacuanha, if the patient, after a puke or two, be covered up warm, brings on a plentiful sweat. After the removal of the dysentery, it is necessary to continue the use of the medicine for some time longer, in order to prevent a relapse. For this purpose, a few grains, divided into several doses, so as not to occasion any sensible evacuation, may be exhibited every day; by which means the cure is effectually established. And indeed small doses, given even from the beginning, have been often found to have better effects in the cure of this disease than larger ones. Geoffroy informs us, from his own experience, that he has observed ten grains of the powder to act as effectually as a scruple or two; and therefore confines the dose betwixt six and ten grains: it has lately been found, that even smaller doses prove sufficiently emetic. The only officinal preparation of this root is a tincture made in wine.

Dr. Akenfide remarks, that, where nothing contraindicates repeated vomiting, he knows no medicine so effectual as ipecacuanha in spasmodic asthmas. In violent paroxysms, a scruple procures relief immediately: where the disease is habitual, from three to five grains every morning, or from five to ten every other morning, may be given for a month or six weeks. It has also been successfully used in hæmorrhages: in menorrhagia one third of, or half, a grain, given every four hours, has been said to effect a cure. In catarrhal, or even consumptive, cases, as well as in various states of fever, small doses have been found of great use.

Intermittents have been cured by giving five grains, or enough to excite nausea, an hour before the accession of the fit was expected. They have also been successfully treated by ipecacuanha given as an emetic at the time of the accession, or at the end of the cold stage. When combined with opium, it affords us the most useful and active sweating medicine of which we are in possession.

A full dose of ipecacuanha in powder is one scruple as an emetic; as a diaphoretic, from half a grain to three; and of ipecacuanha wine, in the first intention, from two to twelve drachms; in the latter, from twenty to forty drops, with a fourth part or more of tincture of opium.

IRIS. The fore part of the tunica cho-

roides is thus named, because of the variety of its colours. See EYE.

IRON, a genus in the class of metals. It is one of the imperfect metals; of a livid white colour, approaching to grey: it is the hardest, the most elastic, and, next to platina, the most difficult to fuse of all the metals. Steel, the carbonate of iron, has the property of striking fire, either with a vitrifiable stone, or another piece of steel. Next to gold, it is the most tenacious: an iron wire, one-tenth of an inch diameter, can support a weight of 450 pounds without breaking. It is ductile enough, when very pure, to be drawn out into threads as fine as hair, since perukes have been made of them. It is the only known substance in nature which is attracted by the magnet, and is itself capable of becoming magnetic and attracting other iron. Iron is known as a powerful medicine, of the tonic class, both to men and brutes. See the articles CHALYBEATE, MARTIAL, &c. The college have retained iron in their Pharmacopœia; viz. Ferrum Ammoniacale, formerly called *Flores Martiales*; Ferri Rubigo, formerly called *Chalybis Rubigo preparata*; Ferrum Vitriolatum, formerly called *Sal Martis*. Ferrum Tartarifatum is also directed; and some other preparations less suitable for veterinary practice.

IRRITABILITY (from *irrito*, to provoke). Irritation is a species of stimulus, expressing a less degree of it than vellication or corrugation, &c.; and the parts on which stimuli are capable of acting, so as to produce motion, are said to be irritable, and this seems to be confined to the muscular fibres. What is produced on the nervous system is more properly termed sensibility. See SENSIBILITY and INCITABILITY.

The same species of stimulus, applied to different parts, produces different effects: thus, urine does not affect the bladder; but, if it is injected into the bowels, it proves purgative, and distension is the chief stimulus that affects the blood-vessels.

Haller endeavours to prove the insensibility of the tendons, membranes, and ligaments. Dr. Hunter was of opinion, that the ligaments, tendons, periosteum, and dura mater, are almost, if not wholly, insensible: however, inflammation soon manifests the irritability and sensibility of parts in which they were not observable in a healthy state; even the bones become sensible when disordered; they also inflame and suppurate; and, in short, the effects of medicines are very often to be deduced from this irritability, as they depend on either increasing or diminishing it. In slow fevers this

irritation must be heightened, in ardent ones lessened. The same is observable in many other disorders.

Dr. Kirkland observes, that irritability is of two kinds, viz. inflammatory or spasmodic. The first of these, he says, always arises from distension, or continued irritation; and, always while the inflammation is attended with any considerable degree of violence, produces a fever, and a quick pulse. The other kind is confined to the expanded brain, and never affects the pulse or produces a fever; but these two kinds may exist together.

ISCHÆMON (*ισχαιμων*, from *ισχω*, to restrain, and *αιμα*, blood); a name for any medicine which restrains or stops bleeding.

ISCHIAS (*ισχιας*), the sciatica, inflammation of the muscles of the hip, an instance of the rheumatism.

ISCHIAS, a name of the two crural veins, one of which is called *the greater*, the other, *the lesser*.

ISCHIADICUS MORBUS (*ισχιαδικος*), *the sciatica*. In the human subject, this disorder has three seats: first, the tendinous expansion, which covers the muscles of the thigh; secondly, the coat of the sciatic nerve; and here the pain is more acute and violent, attended with a numbness: thirdly, the capsular ligament: the depth and severity of the pain lead us to judge of this part being the seat. Worn-out horses sometimes labour under the sciatica.

ISCHIATOCELE, an intestinal rupture, through the sacro-sciatic ligaments.

ISCHIOCELE, a rupture between the os sacrum and the tuberosity of the os ischium.

ISCHION (*ισχιον*), a name of the ligament which retains the head of the thighbone in its acetabulum.

ISCHIUM (*ισχιον*, from *ισχis*, *lumbus*), one of the ossa innominata; hence *Ischias*, and *Ischiadic*, are used for the rheumatic pains of that part. See Plate V. and the description of "*the pelvis*," under BONES.

ISCHNOTIS (*ισχνοτης*), leanness.

ISCHURETICS, medicines that remove suppression of urine.

ISCHURIA (*ισχυρια*, from *ισχω*, to restrain, and *ουρον*, urine). A stoppage of urine, whether by a stone, or any other cause. Sauvages enumerates forty-two species, which arise from different seats and causes. For the particulars of this disease in the horse, see BLADDER.

ISTHMUS (*ισθμος*), signifies strictly a neck of land, and is therefore used by anatomists for such parts as in their situation have any resemblance thereto: as that part which lies be-



tween the mouth and the gullet, and the ridge that separates the nostrils. There is also a protuberance in the vena cava thus called.

ITCH, a cutaneous disease in the human subject, which has occasioned the term to be applied to eruptions, by no means analogous, on the bodies of horses, sheep, &c.

IVES, or VIVES, a disease which has a near affinity to the strangles (see STRANGLES). It is a slight inflammation and enlargement of the glands under the ears of a horse. They seldom come to suppuration, however, as the strangles do, but wear off gradually, and the pain and soreness often abate, as in persons affected with the mumps, or when the almonds of their ears are said to be down; only by keeping the part warm, and protected from the external cold. Sometimes the swelling of these glands continues for a week or a fortnight, and at last spreads downwards under the throat, and terminates in the strangles, and then it requires only to be treated as such.

The *ives*, like the strangles, is most incident to young horses, and usually proceeds from the same causes, viz. their catching cold, being over-heated, or in any degree over-worked about the time of shedding their teeth, &c. A horse that has the ives rather coughs more and oftener than one that has only the strangles, and has a no less difficulty in swallowing, occasioned by the pain and tenderness of the glands, which in some is so sensible, that they can scarcely bear to be touched about the neck and throat; and, in some, the eyes appear swollen, tender, and watery. A fever, for the most part, also attends the ives, and this is often of the malignant kind. Some horses in this disease appear to be extremely sick, and for a short time refuse all manner of food. When it happens at the time of shedding their teeth, the gums will appear red and tumified all round their sockets. The LAMPAS generally rise at the same to a great degree, and reach beyond

the edges of the upper teeth; all which concomitant symptoms excite pain, and make a horse very uneasy. When the ives take place in a horse that is old or full-aged, Gibson says, it is a sign of great malignity, and often of inward decay, which, for the most part, proves dangerous, and therefore ought to be treated as other malignant distempers.

The ives in young horses requires a more simple treatment. The usual method of cure is, in the first place, to anoint the glands with ointment of marsh-mallows, and to cover the horse's head and neck with warm clothing. At the same time it is proper to bleed in proportion to the horse's strength, and repeat the bleeding in a day or two in a smaller quantity, if the fever continue violent; but if the glands inflame and swell, suppuration is to be promoted by frequent embrocations, and keeping the parts warm with poultices. When the swelling retires downwards under the jaws, then the case presents no difficulty, but must be treated as the strangles.

Internally, the same method is to be followed as in colds, and the same opening diet used, till the horse recovers his appetite. Drinking water-gruel plentifully is a great help in all such cases, with scalded bran as a mash; in his bran may be given sulphur and honey with good effect, and an ounce of nitre should be mixed with it once a-day. As soon as he gets flesh, and has recovered his strength, it will be proper to give him one or two mild purges. Purging is also sometimes necessary after the strangles, especially in cases where the horse looks surfeited or hide-bound. This, however, seldom happens, except where there has been some previous ill habit, some bad management, or a more than ordinary malignity in the disorder; for, in most cases, the strangles are so kindly, that horses have been observed to thrive the better afterwards than before.

# J.

## J A L

**JALAP**, the *convolvulus jalapa* Linn. This is the root of an American convolvulus, brought to us in thin transverse slices from Xalapa, a province of New Spain. Such pieces should be chosen as are most compact, hard, weighty, dark-coloured, and abound most with black circular striæ. Slices of briony root are said to be sometimes mixed with those of jalap: these may be easily distinguished by their whiter colour and less compact texture. This root has no smell, and very little taste upon the tongue; but, when swallowed, it affects the throat with a sense of heat, and occasions a plentiful discharge of saliva.

Jalap in substance, taken into the human stomach in the dose of about half a drachm (less or more), according to the circumstances of the patient), in plethoric or cold phlegmatic habits, proves an effectual, and generally a safe, purgative, performing its office mildly, seldom occasioning nausea or gripes, which too frequently accompany the other drastic cathartics. This, however, is not uniformly the case; as, in some, it gripes violently, if the jalap be good, but rarely takes due effect as a purge. An extract, made by water, purges almost universally, but weakly; and at the same time has a considerable effect by urine: the root remaining after this process gripes violently. The pure resin, prepared by spirit of wine, occasions most violent gripings, and other terrible symptoms, but scarce proves at all cathartic; triturated with sugar, or with almonds, into the form of an emulsion, or dissolved in spirit, and mixed with syrups, it purges plentifully in a small dose, without occasioning much disorder. The part of the jalap remaining after the separation of the resin, yields to water an extract, which has no effect as a cathartic, but operates powerfully by urine.

Jalap is a purgative frequently exhibited to horses, though seldom, if ever, uncombined with other ingredients. Hence the mistake (if

## J A R

it be a mistake) as to its properties. At the Veterinary College, it has been found, that neither this nor *colocynth*, though both reputed very active purgatives, are capable of stimulating the bowels of the horse, at least in any material degree. Here we see the necessity for *actual experiment* to ascertain the effects of medicines on *brute* animals.

**JAPONICA TERRA**, or **CATECHU**, an inspissated vegetable juice, prepared in the East Indies from the fruit of the *mimosa catechu* Lin. It is dry and pulverable, outwardly of a reddish colour, inwardly of a shining dark brown, almost black, with some cast of red. When pure, it dissolves totally in water, and almost totally in rectified spirit. As we usually meet with it, a considerable quantity of sandy matter is left by both these menstrua. This medicine is an astringent, and employed as such in alvine fluxes, and in laxity and debility of the viscera.

**JARDON**, a name given by farriers to a hard callous swelling, growing on the outside of a horse's ham. It commonly proceeds from blows and kicks of other horses, but frequently happens to managed horses, by setting them on their haunches. It is at first scarcely discernible, but in time causes the horse to halt, and grows so painful as to make him pine away, and become light-bellied. It should be first treated with repellent lotions. Gibson advises to bathe the tumour well with hot vinegar three or four times a-day. If that does not succeed alone, he recommends an ounce of oil of vitriol to be put to a quart of vinegar; or half an ounce of white vitriol, dissolved in a little water, and added to the same quantity. If the swelling continues hard and insensible, the best way is to blister: mild blisters alone generally succeed.

**JARRETIER**, in the manege, an obsolete French word, signifying a horse whose houghs are too close together, which is now



expressed in French by *crochu*, i. e. crooked or hooked.

JAUNDICE, a disease in the horse, termed by farriers the **YELLOWs**. Horses are frequently subject to this malady, but in them it is less liable to be complicated with other diseases than in men, and therefore, when early discovered, may, for the most part, be easily removed. When it passes on unobserved, however, as often is the case, it induces very bad symptoms, as violent fever, delirium, phrenitis, and at length convulsive disorders, such as the staggers, &c.

That which properly constitutes the jaundice or yellows, is when a proportion of bile gets admission into the blood. This may happen from causes which are often the same that induce many other complaints among horses, viz. violent colds, which are not unfrequently accompanied with fevers of the bilious kind. Full feeding and want of sufficient exercise or evacuations, at proper periods; costiveness; violent exercise, which occasions too great a derivation of blood to the liver; unwholesome food; old surfeits or chronic affections, inducing a bad habit of body: these, and many other such causes, produce the jaundice in horses; and if we add to this, what may be observed from the structure and mechanism of a horse's liver, viz. that he has, no gall-bladder, but only a pretty large duct, with two or three smaller ones that open into it, we may not unreasonably conjecture that a horse is more subject to bilious disorders than those animals that have a proper receptacle for the gall.

The signs of the jaundice in horses, are a dusky yellowness of the eyes; the inside of the mouth and lips, the tongue and bars of the roof of the mouth, look also yellow. But here we are to distinguish between the yellowness of the jaundice, and that yellowness of the mouth and eyes which sometimes happens to horses upon the crisis of an inflammatory fever, where the inflamed parts look yellow when the fever and inflammation are going off. When this happens after a fever, the horse generally comes to his appetite, and looks lively, and the fever leaves him, the yellowness also soon wears off. But in the jaundice the yellowness is one of the first symptoms, and generally appears in the beginning of the complaint. The horse is dull, and refuses all manner of food, and the fever begins slowly, yet both that and the yellowness soon increase and proceed together. In the decline of an inflammatory fever, a horse dungs and stales freely, and in a kindly manner. In the jaundice, his dung is often

hard, dry, and of a pale yellow, or light pale green. The urine is commonly of a dark dirty brown colour, and, when it has settled some time on the pavement, it looks red like blood. He also stales with some pain and difficulty; and, if the disease be not soon checked, all the symptoms will increase, and the horse soon grow delirious.

The jaundice in young horses is seldom dangerous, and, when it is caused by high feeding and want of sufficient exercise, it is more easily removed than when it is brought on by those causes which induce a morbid state of the liver. In old horses, when the liver has been long diseased, the cure will scarcely be practicable. For instance, a horse that has been a considerable while dull, heavy, and inactive, with a diseased appearance; appearing always awkward and loth to turn short and twist his body, especially to the near side; the off-side of his belly hard, and somewhat distended; if the yellowness of the mouth and eyes appears at the same time; we may then suspect a diseased liver, and probably a scirrhus state of that viscus. If the hard scirrhus substances are small, and situated in the thinner lobes of the liver, a horse may probably linger out a considerable time with that defect: but, if they grow large, or happen to be seated near the *porus biliaris* or gall-duct, or the larger branches of the vena portæ, the horse will grow exceedingly weak and unable to endure the least fatigue, the yellowness will increase, and, if the owner can have patience to keep him without labour, he may then hold out to the last stage, when his belly and limbs will swell, and a wasting diarrhoea, or scouring, put an end to his miserable life. On the other hand, when the horse retains a moderate degree of strength and vigour, and the jaundice has not been preceded by any other sickness or malady, there will be no fear of his recovery, if proper care be taken, and proper remedies applied.

In the cure of the jaundice, Gibson advises us to bleed plentifully before the distemper is confirmed, particularly when the liver happens to be inflamed from any cause, and when the case is attended with fever. Even if the jaundice be confirmed, he says, it will be proper to bleed, and afterwards to give some laxative clysters; for, in the beginning of the disease, horses are apt to be costive, and sometimes costiveness alone will bring it on. Clysters are directed of the decoctions of mallows, chamomile, fennel-seeds, with fenna electuary, and linseed-oil: a decoction of madder and turmeric is ordered to be given, with the addition of soap: if

delirium arise, with symptoms of inflammation, he advises farther bleeding, either in the neck or thigh veins, and the exhibition of balls, consisting of diapente, assa-fœtida, cinnabar of antimony, castor, and oil of amber.

"After the use of these," says he, "with the drinks [of madder, &c.], the horse generally grows settled and quiet, and begins to feed, so that the drinks need only be given twice a-day between his mashes. In three or four days, the distemper for the most part abates, and then the balls may be laid aside, to avoid unnecessary expence; but the drinks should be continued till the yellowness is quite gone, and till the horse feeds pretty heartily, and drinks his white water or gruel. When his eyes look clear, and the inside of his mouth of a lively colour, there will be no further need of medicines; but, if a defluxion falls upon his eyes, and shuts them up, with a swelling of the eye-lids, which often happens when the distemper is near its crisis, and going off, the drinks must be continued once a-day for a fortnight or three weeks at least, to prevent blindness; for horses, after this symptom, are very apt to go blind. To avoid expence, and the trouble of making drinks, the following balls may be given, one every day, and continued a fortnight or three weeks."

Take of Turmeric, in powder,  
Diapente, of each two ounces;  
Cassile soap, two ounces;  
Cinnabar of antimony, one ounce;  
Crocus martis aperiens, six drachms.

Make them into eight balls with honey,  
and give one every morning.

"It may be necessary," he adds, "to give the horse two or three mild purges, as soon as he has recovered his appetite and a moderate degree of strength. Rowelling is also proper in the jaundice, especially for young fat horses; though I have cured many horses of the yellows without the help of rowels, and have never known this method fail which I have here recommended, if the horse was not previously broken with diseases: for, when the liver or other internal parts have been any time distempered, when a horse exhibits more or less a surfeited look, hardness and tension on the right side of the belly, or is observed always to labour in turning round, and apt to flag with the least exercise, it will scarce be worth while to lose much time, or bestow medicines upon him."

We shall here state, however, what later writers have advanced on the treatment of the jaundice in horses.

"Though the bile," says Mr. RYDING, in his *Veterinary Pathology*, "is not so liable to be obstructed in horses as in the human subject, yet it sometimes takes place, and is more frequently caused by inflammation of the liver than by biliary concretions. When this happens, the secreted bile becomes obstructed, and is forced into the hepatic veins, or taken up by the lymphatics, and carried into the circulation. This is discovered by the eyes appearing of a dusky yellow colour; the mouth, lips, and salivæ, acquire a yellowish cast; the animal is dull and sluggish, and refuses his food; his urine is of a dark brownish colour, and when on the ground appears red; the animal is very costive, his excrements hard, and have the appearance of a yellowish or greenish clay; his pulse is irregular, with fever, &c. The disease and fever increasing, end in delirium and death."

Mr. Ryding objects, as a general rule in the jaundice, to *let blood*; for "bleeding," says he, "by producing great debility, and promoting absorption, must evidently have a tendency to *increase* the disease."

"Brisk purges, joined with calomel, will be found of the greatest benefit in removing these obstructions to the free passage of the bile."

Take of Barbadoes aloes, in powder, five drachms;  
Calomel, one drachm;  
Mucilage of gum arabic, sufficient to make the ball.

To be given every other day.

"When the horse has taken this medicine three or four times, and his eyes and excrements begin to change colour, leave off medicine, and give him nourishing food, such as ground oats and beans, or a quantity of bruised malt, on which warm water has been sprinkled; and, after a remission of five or six days, the following ball:

Take of Barbadoes aloes, three drachms;  
Calomel, half a drachm;  
Ginger, in powder, one scruple;  
Honey, sufficient to make a ball.

To be repeated every week."

Mr. DENNY's plan of cure "in young horses" is the following:



Take of Aloes, in powder, one ounce;  
Calomel, one drachm;  
Castile soap, half an ounce.

Make them into a ball with a sufficient quantity of treacle.

On the second morning afterwards, Mr. Denny orders the following ball:

Take of Nitre,  
Rosin,  
Castile soap, of each half an ounce;  
Honey, enough to make a ball.

If the yellowness continue in the eyes and mouth, he advises us to repeat this, after an interval of four days; whilst mashes and warm water are to comprise the whole of the animal's diet. Warm clothing too must be allowed, and exercise daily given him.

To prevent a relapse, the purging-ball may be advantageously repeated after the horse has recovered; and the following powder be mixed with the corn every night for fourteen days:

Take of Ethiops mineral,  
Nitro,  
Aniseeds, in powder, of each half an ounce.  
Mix them.

Where inflammation of the liver exists, the treatment recommended under LIVER must be observed; but many of the cases of jaundice in horses are exceedingly slight, and may be removed by gentle purging only.

**JAWS, or JAW-BONES, OF A HORSE** (see Plate V. and the description, under BONES). These, in their external form, should be narrow and lean, but the distance between them and the throat should be large and hollow, that he may the better place his head. If the upper jaw-bone be too square, that is, if there be too great a distance between the eye and that part of it which touches his neck, it is reckoned unseemly; and if there be but little distance betwixt the jaw-bones, then, as soon as the bridle brings his head into its most becoming posture, the bone, meeting his neck, will impede him, especially if he have also a short and thick neck.

**JAW-KNOTTED**, a term used by farriers to denote glandular swellings beneath the jaws of a horse.

**JAW-SET**, a vulgar name signifying the

spasmodic disease called TETANUS or LOCKED JAW. See the latter article.

**JECUR**, the liver. See LIVER.

**JEJUNUM**, so called because it is generally found empty. It is one of the small intestines; where the duodenum ends, it begins. See the article ABDOMEN.

**JESUITS' BARK**, *i. e.* Peruvian bark. See BARK. It is thus named, because father de Lugo, a Jesuit, first brought it to Rome; and the Jesuits there powdered it, and kept it among themselves as a lucrative article.

**JOCKEY**, one that trims up horses, and rides about with them for sale. The rider of a horse in a race is also called a *Jockey*. See the article MATCH.

**JOINT**. See ARTICULUS.

**JOURNEY**, a talk very commonly imposed upon horses, and under which even the fondest and best of those animals require a peculiar degree of attention and management on the part of the traveller. We have carefully and fully enumerated these points, and quoted authorities which will not be disputed, under the articles MANAGEMENT, TRAVELLING, &c.

**JUBA**, in botany, a panicle, so called from its resemblance to a horse's mane.

**JUGALE OS** (from *jugum*, a yoke), the zy-goma.

**JUGALIS SUTURA**. The sagittal suture is sometimes thus called. It is also the suture by which the os jugale is articulated to the bone of the upper jaw.

**JUGAMENTUM**, the Os JUGALE.

**JUGLANS**, walnut-tree, a genus in Linnæus's botany. He enumerates five species and four varieties. The college have introduced into their Pharmacopœia the unripe fruit of the *juglans regia* Linn.; it forms the basis of the Decoctum Lusitanicum, or Lisbon Diet-drink, though the latter has not been adopted.

**JUGULAR**, a name applied to the large veins which take their direction in the course of the neck, and convey the blood from the head. See BLOOD-VESSELS; also Plate XIV. and the explanation of parts composing "the neck," under the article HORSE.

**JULAP**, from the Persian word *Juleb*, which signifies a sweet potion. This is an extemporaneous form of medicine, made of simple and compound water, sweetened, and serves principally for a vehicle to other forms not so convenient to take alone. Veterinary practice disowns these refinements.

**JUNCTURE**, any kind of joint, or the closing of two bodies.

**JUNIPER**, the *juniperus communis* Linn. The berries and tops are used in medicine. This is an evergreen shrub, growing upon heaths and hilly grounds in all the parts of Europe. The wood and resin are not at present made use of for medicinal purposes; the berries are brought from Holland, where this shrub is very plentiful.

Juniper berries have a strong, not disagreeable, smell; and a warm, pungent, sweet taste, which, if they be long chewed, or previously well bruised, is followed by a bitterish one. The pungency seems to reside in the bark; the sweet in the juice; the aromatic flavour in oily vesicles, spread through the substance of the pulp, and distinguishable even by the eye; and the bitter in the seeds. The fresh berries yield, on expression, a rich, sweet, honey-like, aromatic juice: if previously pounded, so as to break the seeds, the juice proves tart and bitter.

These berries are reckoned useful as carminatives; and are also used for their diuretic effects, which depend on the oil they contain. The latter appears frequently in modern veterinary prescriptions. Its properties, however, greatly resemble those of turpentine, which is a cheaper remedy. See **DIURETICS**.

**JUPITER**, a name of the old chemists for *tin*, because they supposed it under the government of that planet.

**JUVANTIA**. Whatever relieved under a distemper, whether consisting of aliment, medicine, or the non-naturals, were thus named formerly.

**JUXTA-POSITION** (from *juxta*, *nigh*, and *pono*, *to put*), is that disposition of parts in any body whereby they are joined or combined together. The placing the ends of a fractured bone together is an instance.



## K.

**KÆKURIA**, the gum elemi-tree. See **ELEMI**.

**KAKA-NIARA**, an East-Indian tree, the leaves of which destroy worms.

**KALI** (Arabic); also called *salsola*, *salicornia*, *alga marina*, *salt-wort*, and *snail-seeded glasswort*. Miller enumerates eighteen species. It is the *salsola-kali*, herbacea decumbens, foliis subulatis spinosis, calycibus marginatis axillaribus. *Class. Pentandria; Ord. Digynia; Linn. Genn. Plant.*

Kali is a plant with spreading, reddish, pretty thick branches; oblong, narrow, pointed, fleshy leaves, like those of houseleek. The flowers are imperfect in the bosoms of the leaves, are followed each by one seed spirally curled, and inclosed in the cup. It is annual, grows wild on the sea-coasts in the southern parts of Europe, particularly of the Mediterranean.

The herb is juicy, tastes bitterish, and remarkably saline. The expressed juice, and infusions, or decoctions of the leaves, are said to be powerfully aperient and diuretic, and in this intention have been much recommended in dropsies; but the kali is principally regarded on account of its yielding copiously the fixed alkaline salt, called soda, or soude. The plant is cultivated about Montpellier, for the sake of the salt. Much of this salt is prepared at Alicant in Spain, from a different species of *kali*. Different marine plants contain this salt, and what is made in Scotland and Ireland is called *kelp*.

From the *quercus marina*, also called *fucus vesiculosus*, *fucus maritimus*, *alga marina*, *sea-oak*, *sea-wrack*, or *sea-tang*, much alkaline salt is obtained by incineration; the juice of its vesicles, left to putrefy, yields on evaporation a portion of acrid pungent salt.

This plant is a soft slippery one, common on rocks that are left dry at the ebb-tide; the leaves resemble those of the oak-tree in shape, the stalks running along the middle of the leaves, and terminated by watery bladders, containing either air or slippery matter. The vesicles begin to fill in March, and burst about the end of July, and discharge a matter thick as honey.

If the putrid juice of this plant is applied to the human skin, it apparently sinks into it, excites a slight sense of pungency, and deterges like a solution of soap. One of the best applications at the decline of glandular swellings, for perfectly dissolving them, is a mixture of the juicy vesicles on the leaves of this plant, gathered in July, with an equal quantity of sea-water; they should be kept in a glass vessel for ten or fifteen days, until the liquor becomes of the consistence of thin honey. The parts affected are to be rubbed with the strained liquor two or three times a-day, and afterwards washed clean with water. Gibson includes *kali* in his Farrier's Dispensatory, under the head of "*Fixed Salts*," of which he says, generally, that they are "aperative," and therefore good "in all kinds of obstructions;" but no specific cases are cited, nor is it intimated what quantity may be given to a horse for a dose.

Many preparations of kali are used in the treatment of human diseases; but, for veterinary purposes, it is perhaps only necessary to particularise a few of them:

**Lapis Infernalis**, a very powerful caustic prepared in the following way, under the College name of

*Pure Kali.*

Take of the Water of pure kali (see below) one gallon.

Evaporate it to dryness; afterwards melt it by fire, and let it be poured off into moulds of a proper shape, so as to form sticks or rolls of a convenient shape.

This caustic has a disposition to liquefy, which renders the application very inconvenient; to remedy which, some use an addition of powdered quick-lime.

*Sulphurated Kali, or Liver of Sulphur.*

Take of Flowers of sulphur one ounce;

Kali, five ounces.

Mix the salt with the sulphur melted by a slow fire, by constant stirring, till they perfectly unite.

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In cutaneous affections this has been used internally. Some have employed it dissolved in water, as a bath for the psora; and (internally) to prevent the effects of mineral poisons.

### *Water of Kali.*

Take of Kali, one pound.

Set it by in a moist place, till it dissolves, and strain it.

This, which was formerly called *Oil of Tartar per deliquium*, has the same medical properties as the kali, and is nothing more than that substance in a dissolved state; which may be made more extemporaneously by dissolving the salt in a proper proportion of distilled water.

### *Water of pure Kali, or Soap Ley.*

Take of Kali four pounds;

Quick-lime, six pounds;

Distilled water, four gallons.

Add to the lime four parts of water, and let them stand for an hour; then add the kali, and remaining part of the water; boil them for a quarter of an hour; let the liquor cool, and strain: a pint of this liquor ought to weigh sixteen ounces. If the liquor raises an effervescence by the addition of any acid, then add more lime. An earthen or glass vessel should be used in the process, and the liquor strained through linen.

**KELP.** See **KALI**. This is mineral alkali in its most impure state; the kelp of commerce containing the ashes of the plant that affords it.

**KENNEL**, a habitation for dogs. See **Dog**.

**KERMES MINERAL**, a medicine produced by throwing into boiling alkaline ley, by small quantities, the crude antimony, finely levigated. Thus the kermes forms instantly; the liquor is filtered, and the same process is repeated for the rest.

**KERNEL**, a popular name for a gland. See **GLAND**. The parotid and other glands about the throat are usually called *kernels*, from their supposed resemblance to the kernel of a nut. Gibson says, "The glands or kernels are made up of vessels so exquisitely fine and small, that in many of them they are imperceptible to the naked eye, for the most part rolled up together like a clue, and are judged to be the terminations and endings of veins and arteries, whereby some juices are strained to such transparency and fineness as fits them to

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be reunited with the blood; others only separate excrementitious matter."

**KIBED-HEELS**, or **MULES**; chinks and sores on the inside of the hind-pasterns, and in the heels. These are caused by travelling in deep sandy lanes, or from natural causes in the part; but mostly from want of care in washing and keeping them clean after exercise. These sores are often so painful as to cause a horse to lose his appetite, and go lame and stiff for some time after setting out. The cure is the same with that for the grease, (see **GREASE**.) If the sores be dry, it is best to keep the heels supple with currier's dubbing, made of oil and tallow. This will keep the skin from cracking, and prevent kibes, if used before exercise, and after washing the heels with warm water, when the horse comes in.

**KICKER AGAINST THE SPURS**, in the manege. See the article **RAMINGUE**.

**KIDNEY**. See **VISCERA**. Brute animals have sometimes only one, but usually two, kidneys. Their situation and structure vary in different subjects. The kidney of the bear is divided into many lobes, while that of the generality of animals is one glandular body. The right kidney of the horse is in contact with the inferior part of the large lobe of the liver, lies without the peritoneum, and has a loose cellular coat, and its own proper capsule. Contrary to what happens in the human subject, the left is lower than the right, and is partly attached to the spleen. Above each of these is a body termed the *renal gland*. This appendage is larger in the fœtus than in the adult. Its uses are unknown. The form of the kidney varies very frequently even in the same animal. The kidney is a glandular substance; it has one, two, or sometimes more, arteries passing to it, but in general only one large trunk, arising from the aorta, which is termed the *emulgent artery*. The emulgent artery going to the right kidney crosses the spine, and is longer than that which supplies the left. The circulation therefore to the left kidney has a greater velocity than that of the right, but this inconvenience is counterbalanced by the veins being the reverse. The kidney may be divided into two parts; the inner, which is approaching to a white colour, and is termed the *tubular*; and the outer, of a red appearance, called the *cortical*. The latter of these is very vascular, and contains a large portion of the red particles of the blood, while in the other the finer and more watery parts only are circulating. The *emulgent artery* enters the kidney at its concave portion, or the pelvis



ramifies most minutely through its substance, and discharges, in the tubular portion, a fluid called *urine*. This fluid is conveyed by several channels into the ureters, which pass out at the pelvis of the kidney, and ultimately terminate by an oblique winding in the bladder. The quantity of urine secreted differs according to the temperature of the atmosphere, and the quantity of fluids taken in by the animal. Thus more urine is voided in cold than in warm weather, as the skin partly performs the office of the kidneys in the latter temperature. This economy is very convenient, as in warm weather we are able to generate cold by perspiration. Some animals secrete large quantities of urine without taking in much moisture, as hares, sheep, &c. but to the generality considerable quantities of fluid are necessary. The blood is the same whether the animal drinks little or more, as the aqueous parts are speedily separated by the powers of the skin and the kidney. The blood remaining after the secretion of the urine is taken from the kidney by a large vein, called the emulgent, which terminates in the vena cava. This blood differs from all other; it has less serum, and more lymph, from the cause before mentioned. We are not very well acquainted with the manner in which the urine is secreted, but we can readily conceive its advantages.

The kidney of the horse is powerfully affected by stimulating medicines, called diuretics; but these are often given to excess, or misapplied, particularly in old and debilitated subjects. Yet it must be admitted, that by these remedies, when *judiciously* employed, we receive great advantages. The kidney of the horse is frequently inflamed, sometimes from the improper administration of diuretics. The symptoms of its disease, which are very clear, are these: the legs of the animal are placed at a considerable distance from each other; he experiences great pain from pressure on the loins; he frequently attempts to void urine, though, from introducing the hand into the rectum, we can perceive little or none in the bladder.

In this disease, any thing that has a tendency to irritate the kidneys is injurious. Not only diuretics, but even the most simple liquids, must be refrained from. A cessation of the offices of the affected organs, large bleedings, gentle purges and clysters, are the remedies to be made use of. Cold applications to the loins also are sometimes advantageous; but if this application does not succeed, the actual cautery may be employed. Blisters are by no means to be used, as the kidney will be still more irritated by an absorption of the cantharides.

The kidney of the human subject is liable to a disease termed DIABETES. In this complaint large quantities of water are secreted, and this water contains a very considerable portion of sugar. The horse also sometimes experiences this affection. Indeed, his living so much on vegetable food will render him more liable to it, as we find it the case in the human subject; and we also have reason to apprehend that animal food has the power of preventing it. The surface of the horse's body is frequently cold in diabetes; the coat staring; the appetite indifferent; and the extremities cold also. The complaint may arise from debility, from great exertion, bad keep, and an undue determination of blood to the extremities, which may drive much blood to the kidneys. The secretory vessels are said to be too much dilated, yet the blood does not unite with the urine in this disorder, as in that case might be expected. Corroborative remedies appear to be peculiarly necessary to strengthen and promote the general circulation in this disease. Yet tartarised antimony, to the amount of three drachms, has been administered, it is said, twice a-day, with considerable benefit.

From the horizontal situation of the ureters of the horse, *calculi* are more frequently discovered in them than in those of the human subject. At the same time we seldom find calculi in the bladder of the horse; sometimes, indeed, they do pass into the bladder, as has appeared on dissection. See BLADDER.

KINA, or KINI-KINA, i. e. *Peruvian Bark*. See BARK. This name is taken from the countess of Cinchon, whose cure, by its means, first occasioned it to be known in Europe.

KINO, i. e. *Gummi rubrum astringens Gambiense*. The college have introduced this resin into their Pharmacopœia. It is a powerful astringent remedy.

KNEE OF A HORSE, the joint that connects the fore thigh to the flank. See the article BONES, and Pl. V. The knee of a horse should be flat and large, without any swelling, roundness, or projection. This part, as is well known, is much exposed to accidents. The most common are strains, which require to be treated after the manner of strains in other parts (see STRAIN), and bruises, what are called *broken knees*. Mr. Taplin's method of treating this accident is described under the article BROKEN-KNEES. For the same, Mr. John Lawrence advises us to wash the wound clean from small specks of gravel or earth, with a linen rag and warm soap suds; afterwards to wipe the part dry, and apply brandy. Urine and salt are frequently applied. Friar's balsam (*compound tincture of*

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*benzoin*), he says, will heal broken knees very speedily. Or we may bind upon the parts tow, dipped in tincture of myrrh. Where much inflammation supervenes, it will be necessary to poultice; and as this may happen, it furnishes an argument against the use of the foregoing, or indeed any stimulating remedies, at least when there is much laceration of the skin. A piece of sheet-lead, bandaged upon the part, Mr. Lawrence thinks, might occasion the hair to grow smooth, and in some degree prevent the disgraceful blemish arising from this accident.

A kind of *hose*, or *boots*, are used to defend the legs of race-horses in travelling. These reach above the knee, and are a useful guard for the protection of that part. "Some kind of guard," says Mr. Lawrence, fastened above and below the knee, would be of great use to *post* horses, which are worked immediately upon

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a recent fall, since they are so liable to a repetition of the accident whilst the knee is yet stiff, and the wound being again laid open, the mischief is past remedy. The *speedy cut* (he adds) might as well be prevented by a leather guard, as *knocking*. These wounds should be attended to in time, and require applications of the same kind as broken knees."

For broken knees, Mr. Ryding recommends the following, which he advises to be "applied over the wound, with the hand." "This," he says, "will, by its gently stimulating power, brace the parts, promote the cure, and facilitate the *growth of hair*."

Take of Cantharides, in fine powder, one drachm;

Olive oil, one ounce.

Mix, and apply occasionally to the part.

## L.

### L A B

**L**ABARIUM, looseness of the teeth.

**L**ABDANUM. See **LADANUM**.

**L**ABIA, or **L**ABRA, strictly signifies the *lips*, but it is used figuratively to express many other parts of a human body, that, by their figure, have any resemblance thereunto; as the labia pudendi are the exterior female privities, &c. and the lips of wounds are also thus called.

**L**ABIA LEPORINA, the hare-lip.

**L**ABIAL GLANDS. See **MOUTH**. These glands in the horse are shewn in Plates XVII. and XX. See the description of parts "*in the head*," under **MUSCLES**.

**L**ABIUM, or **L**ABIA, a *lip*. The lips are all that hang loose before the gums: the red part is called *prolabium*; when the cuticula is taken off, there is a villous appearance, as in the glans penis.

**L**ABORATORY (from *labor*, work), a name which denotes any work-room; but the term is chiefly given to that of a chemist, which contains the furnaces, &c. for carrying on different processes and experiments.

**L**ABRA, i. e. **L**ABIA, which see.

**L**ABRISULCHIUM, a chap in the lip; or the same as *cheilocace*. It is a scrophulous symptom in the human subject.

**L**ABYRINTH, a cavity in the ear is thus named. See **EAR**.

### L A C

**L**AC, milk. See **MILK**.

**L**AC, a certain form of medicine so called from its near resemblance to milk in colour. Thus, when the oil contained in almonds is diffused through water by a pharmaceutical process, the mixture is called *milk of almonds*.

**L**AC, or **GUM LAC**, a kind of gum or resin, brought from Ceylon. It is supposed to be the produce of some kind of insect; and that placed on sticks is called *Stick Lac*. It is wholly incapable of solution in water, and not very readily dissolved in spirit of wine.

**L**ACERUM FORAMEN. It is one of the inner holes in the head, through which the third, fourth, first branch of the fifth, and the sixth, pair of nerves pass.

**L**ACHRYMA, a tear.

**L**ACHRYMAL DUCTS.

} See the article  
EYE.

**L**ACHRYMAL GLAND. The ancients called it *Glandula Innominata*. In the upper part of the socket, a little above the external angle of the eye, is a depression which receives the superior part of the glandula lachrymalis. It is situated behind the tunica conjunctiva of the upper eye-lid, near the outer angle; the duct pierces obliquely and opens on the inside of the tunica conjunctiva, near the superior part of the tarsus. Its use is, to secrete a fluid for keeping the eye continually moist, and for



washing away such foreign bodies as may accidentally be lodged there. This gland in the horse is shewn in Plate XV. See the description of parts "*in the head*," under the article HORSE.

**LACHRYMAL NERVES**, the fifth pair of nerves from the head, divided into branches, the first of which is called the orbitary branch: this is divided into three more, the third of which is called the *lachrymal branch*; it goes off chiefly to the lachrymal gland.

**LACHRYMAL SAC**, a bag or reservoir for the tears situated in a bony cavity of the superior part of the nose close to the inner angle of the eye. It is wanting in the horse. See EYE.

**LACHRYMALE PUNCTUM**. See EYE. The *Lachrymal caruncle* in the horse is shewn in Plate X. See description of parts "*in the head*," under the article HORSE.

**LACTATES**, salts formed by the union of the lactic acid (see ACIDS), with the different alkaline, earthy, and metallic bases; there are twenty-four species enumerated in M. Fourcroy's Elements of Natural History and Chemistry.

**LACTATION** (from *lac*, milk), giving suck; or the time any female animal does that office to her young.

**LACTEÆ**. *Lactææ* primi generis, are the lacteals from the intestines to the mesenteric glands; and the *Lactææ* secundi generis, those from the mesenteric glands to the thoracic duct.

**LACTEALS**, or **LACTEAL VEINS**; as they were called by Asellius, who first observed them passing from the intestines, and circulating a milk-white fluid. They are long and slender pipes, whose coats are so thin as to be invisible when they are not distended with *chyle* or lymph. They arise from all the parts of the small guts, by fine capillary tubes, which as they run from the sides of the guts to the glands in the mesentery, unite and form larger branches; these are called *Vena lactææ primi generis*. The mouths of these lacteals, which open into the cavity of the guts from whence they receive the chyle, are so small as not to be seen by the best microscope. It was necessary they should be smaller than the finest arteries in the body, that nothing might enter which might stop the circulation of the blood. The same extremity of the lacteals has likewise communication with the capillary arteries of the guts, by which they receive a lymph that dilutes and propels the chyle forwards, and moistens the lacteals and glands, that they may not be clogged or obstructed by the chyle's staying in them upon fasting. The other extremity of the lacteals discharges the chyle into the vesicular cells of the glands dispersed up and

down the mesentery. And from these arise other lacteals of a larger size, which carry the chyle immediately into the receptaculum chyli; they are called *Lactææ secundi generis*. The lacteal veins have valves at several distances, which hinder the chyle from returning back into the intestines. Asellius, who first discovered the lacteal vessels in the year 1622, and his followers, thought they carried the chyle to the liver, till Pecquet, in the year 1651, found out the receptaculum chyli, or common receptacle, and ductus thoracicus, or thoracic duct; though both were accurately described by the learned anatomist Bartholomæus Eustachius many years before the discovery of the lacteal veins.

The *receptacle of the chyle* is easily found in living bodies, but with greater difficulty in those that are dead. It lies between the descending trunk of the great artery and the vertebræ of the loins, and is largest between the cœliac and emulgent arteries, surrounded by several vesicular glands, called *Glandulæ Lumbares*, which discharge their lymph into it. The receptacle receives all the second order of lacteals, as well as all the lymphatic veins, both of the legs, and of all the parts of the abdomen; so that it seems to be indeed only a bag (which will contain about one ounce of water), formed by the union of these vessels. The bottom of it contracts to the smallness of a lymphatic vessel, the middle is sometimes divided into two or three parts, and the upper part stretches itself out into a duct about the bigness of a goose quill. This duct ascends into the thorax behind the great artery; and about the heart it frequently divides into two or three branches, which immediately unite again into one, and creeping along the gullet, it marches to the left subclavian vein, where it opens at one or two orifices, which are covered with a semilunar valve, that the blood may pass over them, and the chyle run from underneath it, and mix with the blood in the veins. The ductus thoracicus has valves at several distances, which hinder the chyle that has once passed them from falling back. It receives the lymph-ducts from the several parts in the chest, as it passes along to the subclavian vein. By its running up to the left side, the chyle receives a new impetus from the pulsation of the great artery; whereas, on the right side, it must have ascended only by the pressure of the diaphragm, and muscles of the lower belly upon the receptacle, which it equally enjoys in its present situation.

**LACTIFERI DUCTUS**. The glandular body of a woman's breast contains a white mass, which is merely a collection of membran-

ous ducts; they are narrow at their origin, broad in the middle, and contract again as they approach the papillæ, near which they form a kind of a circle of communication. These are lactiferous ducts, which exist also in brute animals. They are also called *Lactiferi Tubuli*.

**LACTIFEROUS PLANTS**; those which abound with a milky juice, as full-grown lettuce.

**LACUNÆ** (from *lacus*, a standing pool). Any drains or furrows; any small holes within another cavity; but particularly those in the urethra, or vagina uteri. They are the excretory orifices of certain glands situated there. There are many *lacunæ* also about the root of the tongue in all animals.

**LADANUM**. The College of Physicians have retained this resin in their Pharmacopœia; it enters the emplastrum ladani, formerly called *Stomach plaster*; and the emplastrum picis burgundicæ, formerly called *cephalic plaster*. Ladanum frequently appears in veterinary prescriptions.

**LÆMOS** (λαίμος), the gullet or throat.

**LÆSIO**, hurt, interruption; a disorder of any of the functions, &c. of the different parts of an animal body.

**LAGAROS** (λαγάρος), an epithet for the right ventricle of the heart.

**LAGON** (λαγων), the flank.

**LAGOPHTHALMIA** (λαγωφθαλμία), retraction of the upper eye-lid, or hare's eye.

**LAGOSTOMA**, the hare-lip.

**LAIR**, a term in hunting, which signifies the place where the deer harbour by day.

**LALO**, the bark of the tree called *Adansonia baobab*. It is mucilaginous, and powerfully promotes perspiration.

**LAMB**, the young of the sheep (see SHEEP). The lamb is subject to a disease which the shepherds call *leaf-sickness*, which they attribute to their browsing on hawthorn or oak leaves. It is an affection of the head, which is known by their staggering or turning round; probably the disease called GID in sheep. For the cure, they dissolve assafoetida in warm water, and put some of it into the ears. Perhaps this medicine internally, after bleeding, might be really of service.

**LAMBATIVE** (from *lambo*, to lick), a soft linctus or electuary, so named because the patient licks it with the tongue, with a view to its topical application to the fauces.

**LAMBDOIDES**, the suture which runs betwixt the occipitis and ossa parietalia. It is so called from its resemblance to the Greek let-

ter λ. It is also used by some writers as a name for the os hyoides.

**LAMELLÆ**. See LAMINÆ.

**LAMENESS**, any disease in the limbs of an animal, by which a free progression is impeded.

"The steps of a horse, in a sound state," says Mr. Clark, "are equal and uniform; a certain harmony subsisting in the motion of the whole body and limbs, any deviation from this harmony, or defect in moving the legs, constitutes lameness."

"Various are the causes which may occasion this, and frequently a combination of causes may take place at one and the same time in different parts of the same limb; for instance, a prick with a nail in the foot, and a strain in the tendons of the legs, the ligaments of the joints, or in the shoulders, happen frequently together; for, as the pain arising from the nail in the quick causes the horse to trip and stumble in riding, an exertion to save the pained foot may, and indeed frequently does, occasion the straining of the ligaments of the joints or the tendons, &c. of the legs; and thus a complication of the causes of lameness is produced. The same effects are likewise produced from bony excrescences on the legs, which occasion pain; or even an exertion of the horse to save the pained limb, in such case, may occasion his straining some of the muscles in the shoulders, &c."

Here Mr. Clark remarks, very properly, on the very erroneous notions entertained of what is called a *shoulder-slip*. This phrase is supposed to imply a separation of the shoulder-blade from the ribs, a circumstance which never can happen to this bone, from the nature of its junction with the ribs; for the scapula is not fixed to the body by any joint, but by *apposition*, that is, laid along the outside of the ribs, and there fastened by the muscles, &c. which lie both on the inside and outside of the shoulder-blade; hence, though the muscles and tendons of the shoulder may be over-stretched or strained, the bone never can slip out of its place without a force sufficient to destroy the texture of the parts which connect the latter with the ribs. It is true, that the ligament which surrounds the articulation where the humerus joins with the scapula, at the point of the shoulder, is exposed to considerable injury from strains, &c. as is the case with other joints; but Mr. Clark asserts (what will be easily credited by every scientific veterinarian), that he never knew nor heard of a single instance of its being dislocated



in a horse, although it must be allowed that the thing is *possible*. Hence, therefore, he thinks the term "*shoulder slip*" an improper term, only tending to mislead young and inexperienced men, and that it should be expunged from veterinary language.

"Lamenefs," continues the same writer, "frequently proceeds from tumours growing upon the bones of the legs, or on those immediately connected with them: these are commonly termed, in horses, *splints*, *spavins*, *oslets*, *ringbones*, &c. (see the Plates), and are distinguished or named from the particular part on which they grow. But, as these bony excrescences (or *exostoses*, as they are called in the human body) are not limited to particular parts of the legs, but are liable to grow on every other bone, they sometimes are concealed in such situations that it is impossible they can be discovered, although their effects in causing lameness, when connected with the parts that are conducive to motion, are very apparent; instances of which might be met with almost every day, if horses were more frequently dissected." A horse's shoulder-bone, which Mr. Clark preserved, evinces this fact; since it has an *exostosis*, about the size of a large nut, on the thinnest and most transparent part of the scapula *on its inside*. This having lain *next to the ribs*, the horse was, of course, lame for several years, though the cause could not be discovered till after dissection; when it appeared, that this bony excrescence was so situated as to press upon the middle of the sub-scapular muscle.

"Something of the same nature as these *exostoses*," says Mr. Clark, "likewise takes place on the small bones of the joints, especially in those of the hind-legs; the osseous matter forming a number of small tumours between the joints, and cementing two or more of these bones together, which impedes the action of the joint, and consequently occasions lameness.

"Many persons flatter themselves that they can cure these bony excrescences by blistering, &c. even after they have acquired their utmost solidity; but those who are acquainted with the anatomical structure of the parts, the solidity and broad basis of these bony tumours, together with the firm connection they have with the bone on which they grow, will at once see the insufficiency of this method. It is true, in some cases, where these tumours have a narrow base, they may be taken off with a chisel; but this operation must, in many cases, be attended

with consequences much more detrimental to the horse than the excrescence would be in its fullest growth: indeed, a *caries* in the leg-bone may follow, and the cicatrix that remains will disfigure the horse more than the excrescence would have done in its full extent. Splints of an uncommon size we daily see on horses' legs, that yet do not go lame in the least. Hence, therefore, it is obvious, that it is not the size of a splint that causes lameness, after it has grown to its full extent, but rather its interference with some of the soft parts that are subservient to the motion of the legs.

"It likewise frequently happens, that these excrescences grow up between the two small bones on the back-part of the fore-legs, and immediately under the tendons; the grooves or hollows that are there formed on the surface of the excrescence, whilst it is in its soft state, by the friction of the tendons, evidently show that they have been impeded in their motion. In this situation it becomes impossible to remove the excrescence, especially as it frequently happens that the leg-bone, in such cases, is considerably enlarged, a case for which there is no cure, as will be evident on inspecting the bare leg-bones that may be found almost in every field in which there are any dead horses."

Mr. Clark here adduces the authorities of Van Swieten and M. Petit, to shew the effects which bony excrescences produce on the human body on their first appearance; but these, though not inapplicable to the purpose of illustration, need not be produced in this place.

"That the same effect," he observes, "is produced by these excrescences growing on the leg-bones of horses, called *splints*, is very evident from their first beginning to rise on the outside of the bone: they distend or overstretch the periosteum which covers the bone; this creates pain, which is followed with lameness in horses: but, when this membrane is either divided, ruptured, or becomes benumbed by the distention it has undergone, the pain arising from it ceases, and unless the excrescence communicates with some other bone, or presses on some of the parts that are conducive to motion, as the tendons, &c. the lameness goes off, although the tumour on the bone remains in its full extent.

"Lameness likewise proceeds from *rheumatic pains* in different parts of the body, which frequently change from one place to another, and from *cramps*, *spasms*, *sciatica*, &c. all of which produce lameness; the true seat of which, in

some cases, cannot be ascertained with any degree of certainty. Other causes of lameness are more easily discovered from their external appearance, or the symptoms which attend them, as a swelling of the parts affected, attended with pain to the animal upon touching them: of this kind are sprains, either of the ligaments of the joints, or of the muscles and tendons of the legs and shoulders.

"Lameness likewise proceeds from *blows*, as these occasion contusion; or from *wounds* and *punctures*, from *watery sores* about the legs or heels, under every denomination whatever; as, in these cases, the parts are more or less swelled and inflamed, and, of course, unfit for action.

"Lameness likewise proceeds from *violent and long-continued exercise*, which occasions too great a waste of the synovia of the joints; hence they become stiff, and, on the horse's moving, make a crackling noise. The same effect is likewise produced from a variety of other causes which are confined to the feet, as pricks from nails in shoeing, wounds in the hoofs from nails picked up in the streets, glass, sharp-pointed bones, &c. which penetrate into the quick, from injudicious shoeing (see SHOEING), and paring the hoofs to excess, or suffering them to grow too large and long at the toes, by which the feet are benumbed, a partial contraction taking place at the coronet and heels, or a contraction of the whole hoof, which is commonly known by the name of *hoof-bound*. This last disease is a consequence of keeping the legs and hoofs too hot and too dry, by a great quantity of litter and perhaps hot dung at all times under them. The practice of the Arabians ought, in this respect, to be adopted, which is, washing the legs of their horses frequently through the day with cold water. Whilst this is natural to horses' hoofs, it at the same time not only keeps the legs cool, but contributes to brace and strengthen the muscular fibres, and to prevent swellings, &c. in them. How differently treated are our horses in this respect? No such precautions are ever intentionally adopted, but directly the contrary; for it may literally be said, that they are compelled at all times (when in the stable) to stand on a hot-bed, whilst, at the same time, their hoofs are basted with oil, or other things, perfectly of an opposite quality to the intention with which they are applied. It is by this means that the generality of fine horses that are much kept in stables, sooner or later, become lame.

"Lameness likewise proceeds from *corns*, *running thrushes*, from gravel insinuating itself

between the shoe and the sole of the foot, especially in weak hoofs, or, by forming a lodgment there, it at last penetrates into the quick, which is called *graveling*.

"There is likewise another kind of lameness peculiar to the hind-quarters, and which occasions a sudden jerking of the legs upwards on moving; by some it is called *string-halt*, and by others *click-spavin*. This complaint seems to be a particular affection of the nerves of the leg, which causes this kind of involuntary motion, for which no one has yet proposed any certain method of cure.

"From all these, and a variety of other causes, lameness is produced, the true seat of which, in many cases, cannot be discovered by any external appearances; hence," Mr. Clark says, "practitioners ought to be very cautious in speaking of the causes of lameness, before they positively have discovered the particular seat of the disease, or the circumstance which produces it. From a want of this precaution, together with a too superficial inspection of the parts, and too hasty a determination as to the seat or cause of lameness, applications have been made to the sound parts, whilst the real cause has soon afterwards shewn itself to be elsewhere, perhaps in the hoof, to the shame and confusion of the practitioner. Therefore, unless the cause of a horse's lameness is perfectly evident, it will be prudent to examine, at all times, the foot of the lame limb first, with care and attention; and, if it should still appear doubtful, to inspect it on the next day, and even a third time, rather than give too hasty a determination with respect to the seat of a horse's lameness. Indeed, the foot is always to be suspected; and especially after a horse has been newly shod, or has had his shoes fastened, or when the shoe lies too flat, so as to press upon the sole, or when the shoe is made too narrow for the hoof, or if there be a corn in the foot. A horse may be lame from a nail, although it be not driven immediately into the quick, by its thickness pressing on the soft parts, or from its being bent inwards upon the quick; or, when driven too near, it will raise a small portion of the hoof, its own breadth, and force it upon the quick; and this last is the reason why horses remain a longer time lame after such accidents, than when a nail has been driven immediately into the quick. A wound by a nail in the fleshy part of the foot, if discovered soon and properly treated, suppurates, and soon heals up; but a thin splinter, when raised from the hoof by a nail, and forced on the quick, has more lasting effects, and the horse will be longer lame."



From what has been said, Mr. Clark insists, that no certain rules can be laid down for discovering the true seat of lameness in a horse from the motion of his body, although much has been pretended on the subject. "For," says he, "when any of the parts which are necessary to the motion of the body are injured, the adjacent parts will be affected more or less; and thus, by a kind of sympathy, the whole limb will be affected: thus, a prick with a nail in the foot will cause an inflammation of the whole leg; the shooting pains, in these cases, may affect the muscles of the shoulders, so as to obstruct their motion, and, upon touching or pinching those parts, the horse will flinch, and show a sense of pain in them, and a stiffness in moving forward or sidewise, that will be very apt to mislead the unwary, and make them conclude that the cause of lameness is centered entirely in the shoulder, when, in fact, these are only symptoms which proceed from the shooting pains occasioned by the nail in the foot.

"The caution above mentioned will appear still more necessary, when it is considered, that bony excrescences excite the most acute pains whilst they are growing, by their effect in extending the membrane which covers the bone, and which is always attended, more or less, with some degree of inflammation on the part, although, in some cases, the situation of these tumours cannot be perceived. Whilst growing, they may be compared to the pain of *teething* in children, which continues till the periosteum which covers the jaw-bone is penetrated by the new tooth."

In investigating other possible causes of lameness in the horse, the same judicious writer alludes to what he formerly hinted on the subject of spasms in the muscles, cramps, &c. the real seat of which, he says, cannot easily be ascertained in horses from any external appearances that present themselves. Yet the experience of such complaints in our own persons, he thinks, sufficient to make us sensible how painful they may likewise be supposed to horses, and how likely to occasion lameness.

Another cause of lameness, which Mr. Clark notices in conclusion, is the injury done to the backs of horses by *ill-made saddles*, or those that are not properly fitted. "This," says he, "is a consideration of importance both to the ease of the horse and to the rider's safety. It frequently happens, however, that both suffer from inattention to this; for, if the saddle-tree be too wide, and the saddle without a crupper, it moves too far forward upon the shoulder-blades,

by which means the weight of the rider, together with the points of the saddle-tree, confining the motion of the shoulder-bones, impedes their action, which causes the horse to stumble, and frequently to come down, whilst, at the same time, the cartilaginous ends of the shoulder-bones, muscles, &c. are bruised. Hence large swellings are produced on the shoulders or withers, which terminate in fistulous ulcers, and which, from the situation of the parts, are very difficult to cure. On the other hand, too narrow saddle-trees bruise the skin, and occasion those hard lumps called *siftasts* or *warbles*, and render the horse's back tender for a long time."

"A saddle that is well fitted should press equally on every part of the back, the middle or ridge of the spine excepted, without touching, pressing, or even coming near the shoulder-blades, which ought by no means to be interrupted in their motion; the saddle pannel, opposite to the hollows that are on each side of the spine, should be bolstered and well fitted up on each side, which will prevent it from moving too far forward on the shoulder-blades, even although no crupper is used."

As the best general means of preventing lameness in the feet, we may recommend the use of Mr. COLEMAN'S *artificial frog* (see FROG). This, together with shoes *properly adapted to the state of the hoof*, and an attention to Mr. Clark's injunctions to keep the feet cool, and in that state of moisture which is most natural, may undoubtedly prevent many troublesome diseases, the horse will be fine and clean limbed, and free from any disposition to grease or swelling of the heels.

The specific diseases which occasion lameness in horses are treated of under their several heads. As a comparative view of the different affections of the legs, however, seems to possess some advantages, we have given, in the second and third plates XVI. representations of the following diseases.

#### *Blood Spavin and Bone Spavin.*

*Fig. 1. a* shews the inside of the hock, with the varix or blood spavin, as the distended veins appear in that complaint.

*Fig. 2. b* shews the bone spavin, on the inside of the lower part of the hock, and upper end of the instep-bone.

#### *Ring-bone and Curb.*

*Fig. 3.* shews the fore leg of a horse in a straight position.





*Diseases producing Lameness in the Horse.*

Fig. 1.

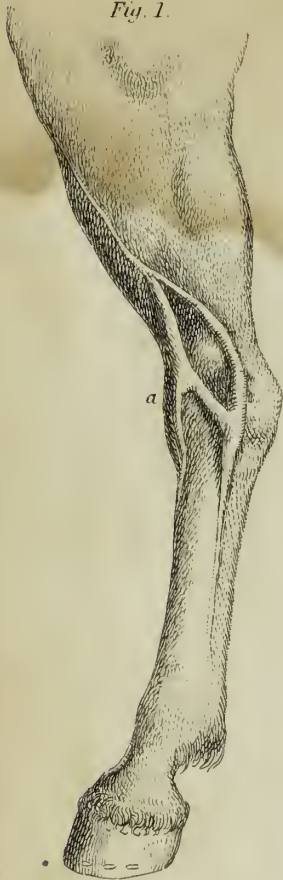


Fig. 2.

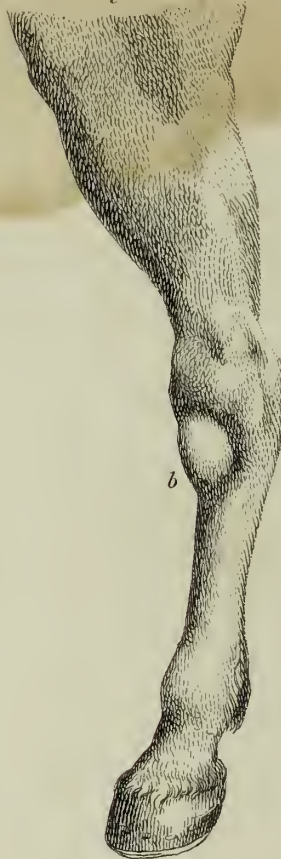


Fig. 3.



Fig. 4.

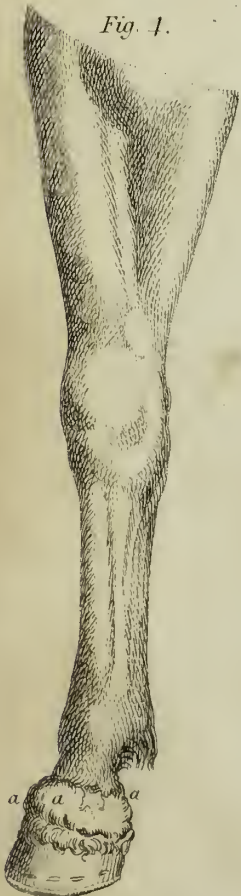


Fig. 5.



Fig. 6.



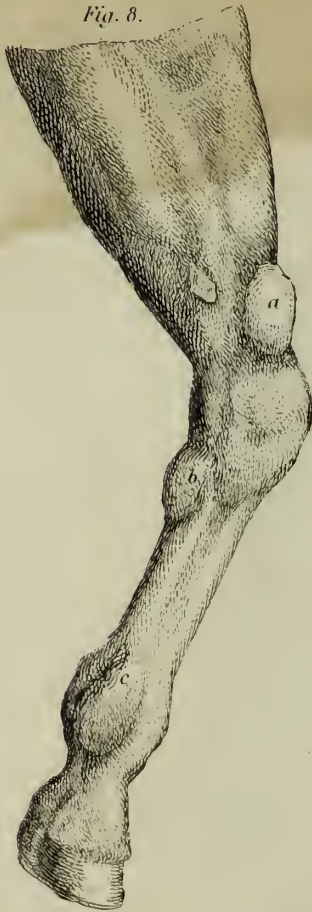




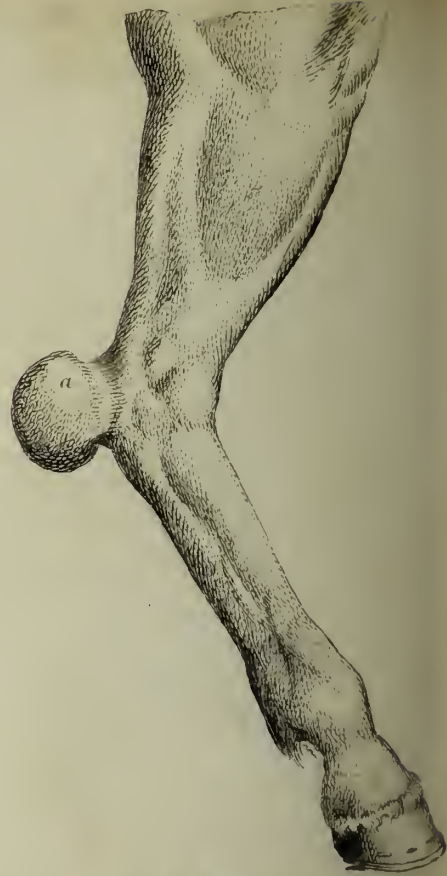
*Fig. 7.*



*Fig. 8.*



*Fig. 9.*



*Fig. 10.*



*Fig. 11.*



*Fig. 12.*



## L A M

*aaa* The ring-bone, or circular hard swelling round the pastern joint.

*Fig. 4.* shews the hind leg of a horse in a bent position.

*a* The heel of the hock.

*b* The curb, a hard swelling, as it appears when grown to its full size.

*Splints, shewn in two Views of the Fore Leg.*

*Fig. 5.* The hinder or back part of the fore leg, to shew a thorough splint.

*aa* The splint, situated between the shank-bone and the back-sinew, appearing on both sides thereof.

*Fig. 6.* The fore leg sideways, to shew the more usual and ordinary kind of splints.

*a* A splint under the knee, near the joint.

*b* A splint on the middle and fore part of the shank-bone, disfiguring the leg.

*c* A more formidable splint on the back part of the shank-bone, near the insertion of the back sinew.

*Windgalls on the Fore Legs.*

*Fig. 7.* shews the windgalls or flatulent tumours that appear on the fore part of the leg.

*ab* Two windgalls that sometimes arise under each side of the knee.

*c* A windgall on the shin, between two muscular tendons a little above the fetlock joint.

*Fig. 8.* shews the windgalls on the hind part of the fore leg, with an uncommon one above the knee.

*a* A large windgall between the tendons of the muscles above the knee.

*b* A windgall under the knee behind.

*cc* The common and usual windgalls on each side the back sinew.

*Wens and Tumours about the Hocks.*

*Fig. 9.* *a* A large wen, as it appears on the heel of the hock.

*Fig. 10.* *abc* Windgalls or flatulent tumours that arise in all the hollow parts of the hock.

*A Quittor and False Quarter.*

*Fig. 11.* shews the quittor.

*a* The orifice from whence the matter generally flows.

*b* The matter running down the quarter.

*cc* The swelling round the coronet.

*d* The sinking and depressure of the hoof, caused by the erosion of the ulcer.

## L A N

*Fig. 12.* shews the false quarter.

*a* The seam on the quarter, from the coronet to the bottom of the foot.

See the articles *QUITTOR*, *FALSE QUARTER*, *SPLINT*, *WINDGALL*, &c.

*LAMINÆ*, plates, signify pretty much the same as *LAMELLÆ*; but the latter is generally applied to the division of shells, and the former to that of the skull, which are also called *tables*, being only two in number; though most shells are divisible into a great many such plates lying over one another.

*LAMINA CRIBROSA*, the cribriform lamella. It is the horizontal plate of the *os ethmoides*, through which the olfactory nerves pass.

*LAMINATED*, plated, signifies those bodies whose contexture discovers such a disposition as that of plates lying over one another.

*LAMINATED STONE*, an order in the class of stones. It is of a laminated structure, and cannot be referred to any other order of this class.

*LAMIUM*, dead nettle, or archangel, a genus in Linnaeus's botany. He enumerates eight species.

*LAMPAS*, a disease very frequent in young horses. In this complaint the bars of the mouth project below the surface of the upper teeth. Whenever it is so considerable as to prevent the animal from masticating his food, which is the chief inconvenience produced by lampas, Mr. Denny recommends the operation of cauterising them. This he thinks should be done rather than wait, as some do, for the growth of the teeth to remove them.

*LANA SUCCIDA*, sordid wool, that which is greasy with the sweat of the sheep.

*LANCET*, the common instrument of surgeons, with which they let blood from the human veins. The instrument for this operation on brute animals is called a *FLEAM*.

*LANGUOR*, and *LISSITUDE*, signify a faintness, which may arise from want of spirits, through indigestion, or too much exercise; or from an additional weight of fluids, from a diminution of secretion by the common discharges, &c. Frequently the word languor is used for low spirits; and *lassitude*, for muscular debility.

*LANIGEROUS TREES*. These are such as bear a woolly or downy substance, as that commonly contained in the catkins of the willow.

*LANUGO*, a down, or soft woolly substance, which grows upon some plants; which



therefore are called *Danuginous*. The latter term is sometimes used in an anatomical sense.

LAPARA (λαπαρά), the flanks, from λαπαζών, *to empty*, because this part falls in as if empty.

LAPAROCÉLE, a rupture through the side of the belly.

LAPATHUM, dock. See RUMEX.

LAPATHUM ACUTUM, sharp-pointed dock. It is the *Rumex acutus*, Linn.

LAPATHUM AQUATICUM, great water-dock. It is the *Rumex Hydrolapathum*, Linn.

LAPATUM, a name of several kinds of sorrel, of rhubarb, of the herb mercury, &c.

LAPIDESCENT (from *lapis*, a stone); is that which has a property of turning any bodies into a stony nature, as many spring-waters will do to pieces of wood and other like substances: and is the same as petrifying. Paracelsus calls the same faculty in an human body thus.

LAPIDELLUM, or LAPIDELLUS, the name of a kind of spoon, formerly used to take out small stones and fragments from the bladder.

LAPIS, *stone*. The chemist considers stones and earths distinctly: the fossilist also divides them into two classes. With the fossilist, the characters of stone are, that they are fossil bodies, whose component parts do not imbibe water; which neither fall down into a loose mass, nor, when rubbed gently between the fingers, are divisible, after they have been soaked a sufficient time in water; without inflammability; containing no metal, at least no larger quantity than barely tinges them; and without a saline taste, and solubility in water.

LAPIS CALAMINARIS, i. e. *Calamine stone*. See CALAMINE.

LAPPA, common burdock, or clotburr, a species of *Arctium*.

LAQUEUS, in surgery, a noose. The term belongs to either bandages or instruments.

LAQUEUS GUTTURIS, a malignant inflammation of the tonsils.

LARBASON, antimony.

LARGE, in the mange. A horse is said to go *large* or wide, when he takes in more ground in going wider from the center of the volt, and describes a greater circumference.

LARYNGOTOMY (λαρυγγοτομία, from λαρυγξ, *the throat*, and τέμνω, *to cut*); tracheotomy, or that operation where the fore part of the trachea is opened, to assist respiration in case of large tumors pressing upon the upper parts and endangering suffocation; as in a quinsy, &c. The common prejudices against this operation, though a very safe one, in the human subject, are so strong, that many are lost

for want of it. Cases may also occur where the lives of brute animals may be saved by this means.

LARYNX (λαρυγξ), the upper part of the trachea, situated below the root of the tongue before the pharynx. It is composed of five cartilages, which sometimes in old men become as hard as bones. The first is the thyroides, or scutiformis, because of its figure, θυρεός, signifying a *shield*, and εἶδος, *figure*. It makes that protuberance in the fore-part of the larynx, called *pomum Adami*. It is a thin cartilage, about an inch broad, but not so long; it is concave within, and convex without. Its four angles have each a small production; the two upper, which are longer, are tied to the horns of the os hyoides, and the two lower to the second cartilage, which is called *annularis*, because it resembles a ring. It is very large and thick behind, which part resembles the stone of a ring, and it grows narrower towards its fore-part. It is situated below the other cartilage of the larynx. They stand upon it as upon a basis, and by it they are tied to the trachea. The third and fourth are alike, and have one common name, which is the Arytænoïdes. They reach from the middle of the concave sides of the thyroïdes to the upper and back part of the annularis; and they make that chink, or rimula, which is the mouth of the larynx, called *glottis*. Betwixt those and the sides of the thyroïdes, there are two small cavities on each side, formed by the muscles and membranes which join them together: in which, if a little drink or bread fall, as sometimes happens when one laughs or speaks, in eating or drinking, it causes a violent cough, and a great tickling. The fifth and last cartilage is the epiglottis; it is of a softer substance than the others, and resembles a little tongue. It is tied by its basis to the upper and middle part of the concave side of the thyroïdes. Its use is to cover the glottis in eating and drinking; for the aliments by their weight press it close down upon the glottis, and they pass over, without entering the larynx, into the œsophagus; but when the aliments are passed, the epiglottis, by a natural effort which is common to all cartilages, rises up again, and gives way to the air in breathing. While we speak or laugh, the glottis must necessarily be open for the passage of the air in breathing; therefore it is not convenient to speak whilst we swallow.

The larynx has two pair of common muscles, and five pair proper. The first of the common muscles is the sterno-thyroïdeus. It arises from the upper-part of the inside of the

sternum, and ascending on the sides of the trachea, it is inserted to the lower part of the sides of the cartilago scutiformis. When these muscles act, they pull this cartilage downward. The second is the hyo-thyroideus. It arises from the lower part of the os hyoides, and descending, is inserted into the lower part of the scutiformis, near the former. They pull up the larynx. The first of the proper muscles is the crico-thyroideus. It arises from the fore-part of the cartilago cricoideus, and running under the thyroideus, it is inserted into the inside of that cartilage. The second is the crico-arytænoideus lateralis. It arises from the lateral part of the cricoideus, and ascending, is inserted into the lateral part of the arytænoideus. This dilates the arytænoideus. The third is the crico-arytænoideus posticus. It arises from the back part of the cartilago cricoideus, and is inserted into the arytænoideus, near the former. The fourth is the thyro-arytænoideus. It arises from the internal and concave side of the scutiformis, and is inserted into the fore parts of the arytænoideus. It contracts the rimula. The fifth muscle is the arytænoideus. It runs upon the upper part of the cartilago arytænoideus, and, with its fellow, forms a sphincter for contracting the rimula.

The larynx receives veins from the jugular, arteries from the carotids, and nerves from the recurrent.

On the lower part of the larynx, upon the sides of the annular cartilages, and of the first ring of the trachea, there are two lymphatic glands, called *thyroideæ*, of the figure of a pear: the colour is red: they have veins, nerves, and arteries, as the larynx.

The use of the larynx is not only to form the voice, but also, by the different apertures of its rimula, the lungs are more or less compressed by the air; for, if the aperture of the larynx had been as wide as the *aspera arteria*, the lungs could have suffered little or no compression. Had it not been for the larynx, we could have received no benefit by breathing; for, if the mouth of the *aspera arteria* had been large and wide, the air had not resisted that force by which it is thrust out in expiration, so as to make any compression upon the lungs whereby the globules of the blood could have been accelerated, or the particles of both fluids mixed together, which we find so necessary to life, that we should die without it.

LASER, *asafoetida*, or the plant from which it flows.

LASSITUDE, *lassitudo*, weariness. This generally expresses that weariness which proceeds

from a disordered state, and not from too great exercise, because that wants no remedy but rest. It proceeds either from an increase of bulk, from a diminution of proper evacuation, or from too great a consumption of that nervous influence which is necessary to maintain the force and energy of the solids, as in fevers and convulsions. It may also arise from vitiated secretions either in regard to quantity or quality. The remedy in the first case is evacuation; in the latter proper diet, or such alterative medicines as influence the defective secretion. See LANGUOR.

LATA LIGAMENTA, the *broad ligaments* of the womb, are properly only a duplication of the peritonæum, reflecting from the loins to the uterus. In women these are long enough to admit it to sink down into the vagina to a certain degree.

LATERAL LIGAMENTS. On the body of the os humeri, in the human subject, there are two particular ligaments; they are long, flat, thin, narrow, fixed on one edge along the two lower thirds of the bone, and reaching to both condyles. They are braced tight, and are very narrow at the upper part, but broader towards the condyles, from whence they are expanded like a goose's foot, and form the brachio-cubital and brachio-radial ligaments.

LATERAL MUSCLES. So the masseter muscles are called, and some others, as the *laterales musculi nasi*, or the *oblique muscles of the nose*, the *lateral depressor*, &c. See Plate VI. and the explanation, under the article EXTERIOR.

LATERITIUM OLEUM, oil of bricks. See BRICKS. This oil has also been named *oleum philosophorum*.

LATISSIMUS COLLI, i. e. *platysma myoides*. For this muscle in the horse, see Plate VI. and the explanation of parts "in the neck," under the article EXTERIOR.

LATISSIMUS DORSI, i. e. the *broadest*, as it covers almost the whole of the back in the human subject. It has a thin, broad, tendinous beginning, which comes from the posterior part of the spine of the ilium, from the superior spines of the os sacrum, from all the spines of the vertebræ of the loins, and from the seven lower of the thorax; it passes by the interior angle of the scapula, from which some of its fleshy fibres sometimes arise, and is inserted with the *teres major*, by a strong and broad tendon, with which it pulls the arm downwards. For this muscle in the horse, see Plate XIII. and the description of the "*shoulders and trunk*," under the article HORSE.



LATTEN, *i. e.* BRASS.

LAUDANUM (from *laudo, praise*). The name implies, that the medicine is *worthy of praise*; it is generally confined to the preparations of opium, and most frequently to the tincture. See OPIUM.

LAUREL. Of this there are many species. The cherry laurel, *lauro cerasus* Linn. contains an oil which is an almost instantaneous poison both to men and quadrupeds, even when diffused in water by means of simple distillation. Dr. Nichols tried many experiments on dogs with this distilled water. What effects would it have on animals as a *medicine*?

LAURUS, the *bay tree*, a genus in Linnæus's botany. He enumerates sixteen species. The college of physicians have retained the leaf and berry of the *laurus nobilis* Linn. The leaf enters the decoctum pro fomento, formerly called *fo-tus communis*; the berry enters the emplastrum cumini, formerly emplastrum à cymino. From the leaves of this tree the *oil of bay* is prepared. See BAY.

LAURUS, a name for the camphor, cinnamon-tree, *sassafras*, and several other trees.

LAVENDER (*lavandula*, from *lavando, washing*, because it was used in baths on account of its fragrance). It is a genus in Linnæus's botany. He enumerates six species. The college of physicians have retained the flower of the *lavandula spica* Linn. A simple spirit, spiritus lavandulæ, and a compound spirit, spiritus lavandulæ compositus, are directed: the spiritus lavandulæ simplex enters the linimentum camphoræ; the flower enters the pulvis asari compositus, formerly called *pulvis sternutatorius*. It is not adapted, as far as we know, to veterinary uses.

LAWING OF DOGS, otherwise called EXPEDIATING, a cruel and unjustifiable way of limiting their activity, and partially disabling them from following the dictates of their nature, by cutting out the ball or the three claws of the fore feet. It is done to prevent dogs, in the neighbourhood of the royal forests, from chasing the game.

LAX, or SCOURING, in horses, a frequent discharge of thin, watery, mucous frothy matter, by the fundament, and this mostly with, though sometimes without, excrements, and commonly, but not always, attended with gripping pains in the guts. See DIARRHŒA.

LAXATIVE, signifies loose in the bowels, so as to go frequently to stool. And LAXATIVES, such medicines as gently promote the peristaltic motion of the intestines. This they do by their smooth and softening quality, taking

away all tensility of the fibres, and facilitating the passage of the fæces: for that reason all oily substances come under this class.

LAXATOR MEMBRANÆ TYMPANI. This muscle arises from the upper part of the bone, above the membrana tympani, runs inward, and is inserted into the thick process of the malleolus. Winflow calls it the *internal muscle of the malleus*. See EAR.

LAXATOR EXTERNUS, or EXTERNUS TYMPANI AURIS. It rises in the upper sinus of the auditory passage, and is inserted into the membrana tympani with a slender tendon to the malleus, and draws the membrane upward and outward.

LAXITY OF A FIBRE, is that degree of cohesion in its parts which a small force can alter, so as to increase its length beyond what is natural; and therefore is a species of debility.

LEAD, the heaviest of the metals except gold. It melts in a moderate heat, and, if kept in fusion, is soon converted partly into fume and partly into an ash-coloured calx (plumbum ustum); this, exposed to a stronger fire, in such a manner that the flame may play upon its surface, becomes first yellow, and afterwards of a deep red (minium or red lead); if, in this process, the fire be suddenly raised to a considerable height, the calx melts, assumes the appearance of oil, and, on cooling, forms a soft leafy substance, of a yellowish or reddish colour (litharge). The proper menstruum of this metal is aquafortis: the vegetable acids likewise dissolve it, but in very small quantity; a quart of distilled vinegar will not take up a drachm. Solutions of lead, accidentally taken, in very small quantities, as in water possessing acid properties and kept in leaden cisterns, are poisonous. The same may be said of lead, especially of its oxids or calces, absorbed from the skin; and even the fumes of these (as in the case of white paint), applied in respiration, are noxious. All have a tendency to produce colic, palsy, and other dangerous affections, both in men and cattle; though, to both, the preparations of lead are sometimes administered as medicine.

LEAD, in the manege, is a term used to express the part that begins any motion first. A horse going in a straight line always *leads* with his right foot.

LEAF-EARED, a cant term applied to a horse that has his ears low, and not well placed, in which case they are generally long and lolling. Such horses are reckoned very durable, yet the imperfection is very unbecoming.

**LEAM**, or **LIAM**, among hunters, a line to hold a dog in, otherwise called a leash.

**LEAP**, in the manege, an air of a step and a leap. See the article **STEP**. A **LEAPING HORSE** is one of the high manege, or that makes his leaps in order, between two pillars, upon a straight line, in volts, caprioles, balotades, or croupades. Leaping is an important qualification for a hunter. See **HUNTER**.

**LEASH**, a numerical term used by sportsmen to denote three greyhounds, or foxes, hares, or other kinds of game. Formerly it meant double, or perhaps an indefinite number.

**LEEK-HEADS**, or **FIGS**. See the article **FIG**.

**LEGS OF A HORSE**. These should have a due proportion of length to that of the body (see **PROPORTIONS**). The fore legs are subject to many injuries (see **LAMENESS**). There are several marks of bad legs; that is, if they appear altogether straight, or as if they were all of one piece, &c. A horse is said to be *too straight upon his legs*, when the knee, shank, and coronet, descend in a straight or plumb line, with the pastern-joint appearing more, or at least as much, advanced as the rest of the leg. Such legs resemble those of a goat, and make a horse apt to stumble; so that, in time, the pastern will be thrust quite forward out of its place, and the horse become lame.

Horses which are too straight on their legs are the opposite to those that are long-jointed; that is, whose pasterns are so long and flexible, that the horse, in walking, almost touches the ground with them. This is a worse imperfection than the former, which admits of some remedy, but there can be none for this; besides, it indicates little or no strength, and such horses, in fact, are not fit for any fatigue.

Some horses, however, though long-jointed, yet do not bend their pasterns in walking. *Solleysel* says, if the latter be not too flexible, such a horse will gallop and run with a great deal more ease to his rider than if he were short-jointed. Indeed, he compares these horses to coaches with springs, which render it infinitely more easy to the rider than a carriage without them.

**LEGUMEN**, in botany, signifies that species of plants which is called *pulse*; and these are so named because they may be gathered with the hand, without cutting. All those plants which have a papilionaceous or butterfly-like flower are reckoned among the legumina. In the Linnæan system, a legumen is defined a pericarpium of two valves, wherein the seeds are fastened along one suture or joining only.

The leguminous tribe of plants furnish some useful articles of food for cattle. See **FOOD**.

**LEIPOTHYMIA** (λειποθυμία, from λειπω, to leave, and θυμος, the mind), a fainting fit, or swoon.

**LEIPYRIA** (λειπυρία, from λειπω, to leave, and πυρ, heat or fire); a dangerous species of ardent fever, wherein the internal parts are scorched with heat, whilst the external parts are cold. It is a kind of tertian.

**LEMNA**, duck-meat; a genus in Linnæus's botany. He enumerates five species.

**LEMNIAN EARTH**, or **EARTH OF LEMNOS**, a substance similar to the Armenian bole. The yellowish brown sort is reckoned the best.

**LENGTH**, in the manege. To passage a horse upon his own length, is to make him go round in two treads, at a walk or trot, upon a spot of ground so narrow, that the horse's haunches being in the centre of the volt, his own length is about the semidiameter of the volt, the horse still working behind the two heels, without putting out his croup, or going at last faster or slower than at first.

**LENS**, a term in optics for a convex or concave glass that is made to throw the rays of vision into a point; whence also the crystalline humour of the eye, from its performance of the same office, is by anatomists called a lens.

**LENS**, the lentil, a species of ervum, viz. the ervum lens of Linnæus. It is also a name of the lenticula.

**LENTICULAR**, a surgical instrument, also called a **RUGINE**.

**LENTICULARE OS**, a name of the fourth bone in the first row of the wrist. It is also called *orbiculare* and *pissiforme*. The bone in the ear, called *os orbiculare*, is part of the incus.

**LENTICULARES GLANDULÆ**, the small glands of the intestines, so called on account of their size.

**LENTICULARIS FEBRIS**, a fever so called because of the many eruptions that appear on the skin about the size of lentils. It is the same as *petechialis febris*.

**LENTOR**, a term used by some ancient writers, and adopted by Boerhaave and his followers in the humoral pathology. By it Bellini expresses that fizy viscid state of the blood, which in malignant fevers was supposed to obstruct the capillary vessels, and to occasion the chief mischief which happened. See Bellini *De Febribus*, particularly Prop. 19 and 20.

**LEONTODON**, dandelion, a genus in Linnæus's botany. He enumerates ten species.

**LEPORINA LABIA**, the **HARE-LIP**. This is when the upper lip in the human subject has



a natural defect in the middle, like a slit towards the nose, resembling that of a hare, whence its name.

LEPRA (*λεπρα*), the leprosy; a distemper much more common among the ancients, and in warmer climates, than among us, or else they have been nicer in distinguishing it into several kinds than it deserved; as may be seen in most of the commentators upon the ancients, and especially the lexicographers. The great difference seems mostly owing to the difference of climate and ways of living. Hence the *lepra Græcorum* and *lepra Arabum* are differently described. How far any of the cutaneous affections of brute animals resemble *lepra*, the state of our knowledge is incompetent to decide.

LESSES, in the huntsman's language, the dung of a wild boar, bear, or wolf.

LETHARGY (*ληθαργος*, so called, *απο της ληθης*, from *oblivion* or *forgetfulness*, and *αργος*, *lazy* or *sllothful*), a heavy and perpetual sleep, with scarcely any intervals of waking. On being awakened, the patient answers, but ignorant or forgetful of what he said, and immediately relapses into the same state of sleep. The lethargy, in the human subject, is often the attendant of fever, and Dr. Cullen speaks of it as a *symptomatic apoplexy*. Gibson and other writers treat of it as an original affection in the horse.

"Sometimes," says Gibson, "horses are seized with sleepiness in very great colds, especially those colds that have some degree of malignity in them; but this symptom generally wears off as the distemper abates. But a true lethargy seldom happens unless to horses that are old, or growing old, and to such especially that have been worked beyond their strength and keeping. I have known many horses seized with lethargic disorders after very hard labour, when there has not been sufficient time allowed for food and rest, by which nature has received such a shock, that some have died, notwithstanding proper applications have been made to recover them. Others have recovered with much difficulty; and, of those, some were not afterwards able to go through any fatigue.

"When a horse falls into a lethargy, he generally rests his head with his mouth in the manger, and his poll often reclined to one side, which denotes great stupor and insensibility. As there is seldom any great pain, he will shew an inclination to eat, but is apt to fall asleep with the hay, bran, oats, or whatever else has been given him, in his mouth. These, indeed, he seldom chews, but swallows them down,

Except he is roused, and his head kept moving, he presently drops asleep again; and, if a horse continues any time in this state, he falls into an atrophy, or universal decay, especially if his lungs, liver, or any other of the principal viscera be diseased, or if he has received any hurt on his head.

"A lethargy in a horse may be cured, if he is not very old and past his vigour. It is always a good sign if he has a tolerable appetite, and so far retains his smell and taste as to eat up a mash with a relish, and without dozing over it; or, though he eat but little hay, if, at the same time, he drinks pretty freely, without flabbering, and lies down and rises up carefully, even though it be but seldom, some hopes may be entertained of his recovery. But if a lethargic horse does not lie down; if he is altogether stupid and careless, and takes no notice of any thing that comes near him; if he dungs and stales seldom, and even when he sleeps and dozes; his situation is bad. If he runs at the nose a thick white matter, it may relieve him; but if the discharge be a viscid gleet that sticks to his nostrils like glue, and if this becomes profuse, and changes to a ropy, reddish, or greenish matter, with an increase of the symptoms of stupor, it is an infallible sign that (as the name of this distemper imports) it will prove deadly.

"As to the cure, if the horse be young, and this distemper arose either from catching cold in some damp place, or from any hard usage, there may be great hopes of his recovery, because the disease, in this case, is in some measure symptomatic. The right way is to begin with bleeding, but not in too great quantity; for lethargic horses are seldom able to bear the loss of blood, unless they be young and lusty. After bleeding, give the following drink, which consists both of pectoral and cephalic remedies; for, in some lethargic disorders, the lungs are also much affected.

Take of the leaves of Pennyroyal,  
Coltsfoot,  
Chamomile flowers, of each a handful;  
Rue,  
Hyssop, of each half a handful;  
Liquorice root sliced, an ounce.

Infuse these in two quarts of boiling water, in a deep vessel, close covered; and, when it has stood to be cold, pour it off.

Also,

Take of *Assa foetida*,  
 Russian castor, of each half an ounce;  
 Saffron, one drachm.

Bruise the *assa foetida* and castor, and shred the saffron; then tie them in a rag, and let them steep all night in a pint of strong mountain wine, or in the same quantity of spirit of wine and water, about three parts water to one of the spirits.

"In the morning give a pint of the first infusion, with a quarter of a pint of this tincture; the same quantity in the afternoon, and also on the days following, squeezing the rag with the castor and *assa foetida* in each dose, leaving it always to soak in the tincture till there is occasion to use it again, and that no taste or colour remains in it. The first three or four days let the horse have emollient clysters; for, in all these distempers, they are apt to be costive. These are best made of fat broth, or of the leaves of mallows and marsh-mallows, boiled in water or milk, with an ounce of sweet fennel-seeds, adding half a pint of linseed oil, and the same quantity of common treacle, to three pints or two quarts of the decoction.

"If the sleepiness wears off, and the horse begins to move with spirit and vigour, give him one of the following balls every morning fasting, for a fortnight or three weeks:

Take of Cinnabar of antimony,  
*Assa foetida*, of each half an ounce;  
 Castor, in powder, two drachms.

Beat this mass into a ball with a sufficient quantity of oil of amber.

"After the use of these, should the horse come to feed heartily, two or three mild purges may be proper, just such as will thoroughly open his body, as the following:

Take of Diapente, half an ounce;  
 Succotrine aloes, half an ounce;  
 Cinnabar of antimony,  
 Salt of tartar, of each two drachms;  
 Oil of amber, a spoonful.

Make these into a ball with treacle.

"This may be given with the usual precautions. It will work partly by dung, and partly by urine, &c. and with little or no griping, and render the cure more perfect.

"It is usual, in lethargic affections, and most other disorders of the head, after opening

the skin of the forehead, to put into it a piece of some bulbous root, and to cut several issues in the neck, breast, belly, and thighs; but these are sometimes hurtful, especially when the distemper is attended with weakness: and I am the more convinced of this, because I have several times cured lethargies in horses that were not very old, without any rowels or other issues, by the method above prescribed; and, instead of large evacuations, or allowing any thing to lessen the quantity of the blood, have indulged them in pretty liberal feeding, divided in small portions, and exhibited at proper intervals."

**LEUCOPHLEGOMATIC** (from λευκον, *album*, white, and φλεγμα, *pituia*, *phlegm*), signifies that constitution of body where the blood is of a pale colour and broken texture. The patient is of a bloated habit, and watery tumours take place in the feet, legs, or other parts. Such are commonly asthmatic and dropical, and in a dangerous state of health. The swelling called *grease* in horses is *leucophlegmatic*.

**LEVATOR** (from *levo*, to lift up), an epithet applied to a muscle which *elevates*, or raises upwards, the part into which it is inserted. Of these there are several, differently situated.

**LEVATOR PALATI MOLLIS.** This muscle rises from the basis of the skull, near the articulation of the lower jaw, runs down the fauces, passes inwards and forwards, spreads itself on the palatum molle, and goes to the uvula.

**LEVATOR PALPEBRÆ SUPERIORIS.** It arises, on each side, from the bottom of the orbit, by a small tendon; and as the fleshy fibres of this muscle pass over the globe of the eye, they gradually spread, and afterwards terminate by a broad tendinous expansion in the superior part of the tarsus, belonging to the upper lid.

**LEVATOR SCAPULÆ**, a muscle which rises from the second, fourth, and fifth of the transverse processes of the neck, by so many distinct beginnings, which unite, and are inserted into the superior angle of the scapula, which it draws upward, the word *levator* importing a lifter-up.

**LEVATORES ANI.** These arise from the symphysis of the os pubis, the internal part of the ileum, and the sharp process of the ischium, directing their course towards the sphincter, and bending part of their fibres with those of it; wherefore they partly serve to expel the faeces, but do not, as generally supposed, compress the vesiculæ feminales in coition. The *levator ani* in the horse is shewn in Plates XI.



and XII. See the description of parts in the "*lower limbs*," under the articles HORSE and MUSCLES.

**LEVATORES LABIORUM.** These muscles rise from the cavity on each side under the os jugale, in the os maxillare, and are inserted with the zygomaticus major and others into the angle of the lips.

**LEVATORES COSTARUM,** elevators of the ribs. These muscles rise from the transverse processes of the vertebrae, and are inserted into the ribs: they are divided into two classes, viz. the longiores and the breviores. The breviores are those which arise from the transverse processes, and are inserted into the next rib; the longiores run over one rib, and are inserted into the next. For these muscles in the horse, see Plate XI. and the description of parts "*in the trunk*," under the article HORSE.

**LEVATORES LABII INFERIORIS.** They arise from the sockets of the incisors, and are inserted into the lower lip.

**LEVATORES LABII SUPERIORIS.** They arise from the os maxillare, and descend obliquely under the skin of the upper lip.

**LEVERET,** a young hare, so called in the first year of her age.

**LEVIGATION** (from *laevo*, *smooth*), is the reducing hard ponderous bodies, such as coral, tutty, calamine, and the precious stones, into a light subtile powder, by grinding upon a marble stone with a muller, as painters do their colours. This is much used in pharmacy; but, unless the grinding instruments are extremely hard, they will so much wear away, as to double sometimes the weight of the medicine so levigated.

**LEVINER, or LYEMER,** a kind of hound of a very singular scent, and incomparable swiftness. He is a middle kind, betwixt a harrier and a greyhound, as well with regard to qualities as to his form. This dog excels in smelling and swift running, follows the game with more eagerness, and takes it with great quickness.

**LEVITY,** is the diminution or want of weight in any body when compared with another that is heavier, and in this sense it is opposed to gravity.

**LIBANOTIS,** mountain stone-parsley, a species of athamanta, a species of cachrys, &c.

**LIBANOTUS,** frankincense.

**LIBER,** in botany, the inner bark or rind of a tree or plant, distinct from the cortex, which is the outer: thus, according to Linnæus, the calyx is a continuation of the cortex, but the corolla a continuation of the liber.

**LIBERTY,** in the manege, a void space left

in the middle of a bit, to give place to the tongue of a horse. It is made by the bit's arching in the middle, and rising towards the roof of the mouth. The bit, according to the various forms of the liberty, in the old manege, acquired different names; as a *scotch-mouth*, a *Pignatelle*, i. e. with the liberty after Pignatelle's fashion; a *cannon-mouth*, with the liberty like a pigeon's neck, &c. Guillet says, care must be taken not to make the liberty too high, lest it hurt, or at least tickle, the palate, and make the horse carry low.

**LIBIDO,** strictly signifies venereal desire; but is used by some writers to express any strong inclination, as to forward the natural excretions by stool or urine, or to scratch, in some cutaneous distempers, which occasion itching.

**LICHEN**, i. e. *impetigo*, tettar, or ring-worm. It is the impetigo of the Arabians and of Pliny, and the scabies of Celsus.

**LICHEN**, liver-wort, a genus in Linnæus's botany, of the order of *Algas*, or *Thongs*. He enumerates one hundred and thirty species, and several varieties.

**LICHEN** (λειχην), a name for a species of leprosy, and also of certain warts that grow on the legs of horses.

**LIEN**, the spleen. See SPLEEN.

**LIENTERY** (λειαντερία, from λειον, *læve*, *smooth*, εντερον, *intestinum*, *gut*, and ρεω, *fluo*, *to flow*), a particular looseness or diarrhoea, where the food passes so suddenly through the stomach and guts, as to be thrown out by stool with little or no alteration. Its cure is performed by the warm astringents.

**LIFE**, that principle which distinguishes animated beings from dead matter, and the loss of which reduces them to the state of the latter. Mr. Hunter contends for the existence of this principle in the blood of animals. See BLOOD.

**LIGAMENT** (from *ligo*, *to bind*), a white and solid body, softer than a cartilage, but harder than a membrane. They have no conspicuous cavities, neither have they any sensibility, lest they should suffer upon the motion of the joint. Their chief use is to connect the bones, which are articulated together for motion, lest they should be dislocated with exercise.

**LIGAMENTUM ANNULARE**, the *annular* or *ring like ligament*. This name is given to any ligament which seems to encircle a limb, with a design to restrain the several tendons which pass under it, and which, but for this, would be drawn, by the action of the muscles, into a straight line, and thus defeat the motion

that might be intended. Familiar instances of this occur on the ancles and wrists in the human subject.

**LIGAMENTUM COLI DEXTRUM.** The mesentery having reached the end of the ileum joining the colon, the particular lamina, which is turned to the right side, forms a small transverse fold, thus named.

**LIGAMENTUM COLI SINISTRUM.** The mesentery, here called *mesocolon*, having passed below the left kidney, contracts, and forms a transverse fold, thus named.

**LIGAMENTUM COLLI**, a powerful ligament found in most animals that graze the pastures for their sustenance. It is calculated to take off from the muscles the weight of the head, during the long continuance of that posture, in which it is necessary for them to remain. The situation of this ligament in the horse is shewn in Plate X. See the description of parts "*in the neck*," under the article **HORSE**.

**LIGAMENTUM HEPATIS SUSPENSORIUM.** It was the umbilical vein in the fœtus.

**LIGAMENTUM INTERMAXILLARE.** So Winslow calls a ligament on each side of the face. It connects the two jaws, and gives insertion to the posterior fibres of the buccinator muscle. It is strong and broad, fixed to the outer side of the upper jaw, above the last dens molaris, and at the side of the apophysis pterygoideus internus. By the lower end it is fixed on the outside of the lower jaw, below the last dens molaris.

**LIGAMENTUM LATUM, vel SUSPENSORIUM HEPATIS.** It is made up of the double membrane of the peritonæum, which covers the liver on each side, and meets to be joined by the sternum. See **LIVER**.

**LIGAMENTUM NUCHÆ.** So, in the human subject, the musculus cucullaris is called, where it is inseparably united to its fellow in the nape of the neck.

**LIGAMENTUM POUPARTII**, Poupart's ligament. It is only the lower border of the descending oblique muscle of the belly, stretched from the fore part of the os ilium to the pubes.

**LIGAMENTUM PUBIS INTEROSSEUM**, a strong triangular membrane, fixed by two of its edges in the inferior branches of those bones, all the way up to their common symphysis: the third edge, which is lowest, is loose; and this whole membrane, the middle of which is perforated by a particular hole, is stretched very tight between the two bones, and

under their cartilaginous arch, to which it adheres very closely.

**LIGAMENTUM ROTUNDUM**, the *round ligament*. There are two of this kind, one on each side of the uterus in the human female. They are two long small plexuses of blood-vessels upon the fore part of the ligamenta lata, whose use is not known. They run in the duplicature of the broad ligaments, from the corners of the fundus uteri, pass through the annual aperture of the obliquus externus, and are lost in the middle and upper part of the fat in the groin.

**LIGATURE**, any thing that is tied about a part of the body, as a bandage. In a more limited sense it denotes a thread, or waxed piece of silk, or of narrow tape, tied round a blood-vessel to prevent hæmorrhage, after it has been divided in an operation.

**LIGHT.** A horse is said to be *light* that is swift in his paces. We likewise call a horse light that is well made, though he is neither swift nor active; for, in this last expression, we consider only the shape and make of a horse, without regard to his qualities.

**LIGHT UPON THE HAND.** A horse is said to be light on the hand that has a good mouth, and does not rest too heavily on the bit.

**LIGHT-BELLIED**, a term applied to a horse that has flat, narrow, and contracted sides, which makes the flanks turn up like that of a greyhound.

**LIGHTS**, a vulgar name for the lungs. See **LUNGS**.

**LIGNUM**, wood. Of woods several are used in medicine, as the lignum aloes, or *cordia Sebestena*; lignum Campechense, or *hæmatoxylinum*; lignum guaiacum, &c.

**LIGS**, or **GIGGS**. See the article **GIGGS**.

**LILIUM PARACELSI**, the *lily of Paracelsus*, or, tincture of metals. A mixture of copper and antimony, another of regulus of antimony and tin, and regulus of antimony, nitre, and tartar, are melted together in a crucible, and then poured into a mortar. They are introduced as hot as possible into a matras, and spirit of wine is poured upon them. The mixture is digested till the spirit has acquired a red colour. Part of the metallic substances calcines during their fusion; by means of the nitre, the tartar and nitre alkalize together: the small portion of metallic calx augments the causticity of the alkali, which thereby becomes more able to act upon the oily principles of the spirit of wine. It is for this reason that this tincture is



a little more coloured than the tincture of salt of tartar.

**LILY, LILIUM** (from *λειος, smooth, graceful*), so named from the beauty of its leaves. This plant is well known. Boerhaave enumerates nineteen species, but there are very few of them that are useful in medicine. The *common white lily, lilium candidum*, or *Palestinum, foliis sparsis, corollis campanulatis, intus glabris*, is perennial, a native of Syria and Palestine, common in our gardens, and flowers in June. The roots are extremely mucilaginous; and, boiled with milk or water, are used in emollient and suppurating cataplasms; but the other farinaceous poultices possess nearly equal advantages. Dr. Alston says, that the roots are of the nature of squills. It is said, that Godorus, serjeant-surgeon to queen Elizabeth, cured many dropical people by giving them bread to eat in which these roots were baked.

**LIMB**, by mathematicians, is used to signify the outermost border of any thing; and from them transferred to the same purposes in physics.

**LIMBS**, those parts of an animal which, in anatomical language, are called the *extremities*. In quadrupeds each limb consists of the thigh, leg, and foot, with their appendages. In a horse, much depends on the make and shape of the limbs, both as relating to beauty and activity.

**LIMER, or LIME-HOUND**, the same as **BLOOD-HOUND**, a large dog for hunting the wild boar.

**LINCTUS**, the same as **LAMBATIVE**, probably from the same derivation, or from *lingua, the tongue*, because it is a form of medicine to be licked up with the tongue.

**LINEA ALBA**, signifies a *white line*, and is therefore given, by reason of its colour, to that line which reaches from the cartilago ensiformis in the human body to the os pubis, and is formed by the union of the tendons of the oblique and transverse muscles, dividing the abdomen into two in the middle. This receives a twig of a nerve from the intercostals of each of its digitations or indentings, which are visible to the eye, at least in lean persons.

**LINEÆ SEMILUNARES**. They terminate the lower part of the external oblique muscle, and are lost at the upper part.

**LINEÆ TRANSVERSÆ**. They pass between the linea alba and lineæ semilunares, and are formed by the indentations of the recti muscles. They are not directly transverse, as represented by some, but are irregularly waved.

**LINGODES**. Fevers are so called, by writers, that are much attended with a hiccup.

**LINGUA**, the tongue. See **TONGUE**.

**LINGUALES GLANDULÆ**, those of the foramen cæcum of the basis of the tongue.

**LINGUALES**, the ninth pair of nerves, distributed to the tongue.

**LINGUALIS MUSCULUS**, the muscle of the tongue. It rises from the basis of the os hyoides, and runs to the tip of the tongue. It is, in general, the fleshy fibre of the tongue, which runs in many directions.

**LINIMENT**, a thin ointment; a soapy or oily composition, calculated to be rubbed, with the hand, into a diseased part. See **OINTMENT**. Many of the forms termed *embrocations* may be considered as liniments (see **EMBROCATION**). The composition called *Opodeldoc* (see **OPODELDOC**) is also of this kind. The following are from Mr. TAPLIN.

Take of Cantharides, in fine powder, one drachm;

Olive oil, two ounces.

Mix them together.

This Mr. Taplin employs in the treatment of *spavins* of long standing. For *windgalls* he directs the following:

Take of Oil of origanum,

Oil of turpentine, of each half an ounce;

Camphorated spirits of wine, one ounce.

Mix them together by shaking the bottle.

Mr. John Lawrence also supplies the following useful liniments:

Take of Soft soap,

Venice turpentine,

Fuller's earth, of each a suitable quantity;

Brandy, enough to make the whole of due consistence.

He directs this to be applied on tow.

Mr. L. also recommends, as a cheap liniment, mustard-seed fresh ground, joined with camphorated spirits. He gives other forms of liniment, viz:

Take of Oil of turpentine,

Oil of bay, of each four ounces;

Camphor, rubbed fine, one ounce;

Rectified oil of amber, three ounces;

Tincture of cantharides, one ounce.

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Or,

Take of Soap liniment, four ounces;  
Spirit of sal ammoniac,  
Tincture of opium, of each one  
ounce.

Mix them.

In some of the foregoing we have ventured to deviate a little from Mr. Lawrence, especially in withholding "*vinegar*" from a composition in which "*soap*" has been previously directed. We are sure, upon due reflection, that he will accede to our alteration.

**LINSEED**, or **LINTSEED**, the seed of the common flax; *linum sativum* Linn. Linseed yields to the press a considerable quantity of oil; and, boiled in water, forms a strong mucilage. Infusions and decoctions of these seeds are commonly made use of, like other vegetable mucilages, in catarrhus and pulmonic symptoms. They are also of use in nephritic pains and stranguries. Half a pint of the seed unbruised is about a proper quantity for two gallons of water. The powder of these seeds, after the oil has been pressed out of them, is employed in emollient and maturing cataplasms. The expressed oil is supposed to be of a more healing and balsamic nature than other oils of this class, and therefore has been very generally employed in pulmonary and other complaints; but this opinion is not well founded.

**LINSEED OIL.** See **LINSEED**.

**LINT**, scraped linen. In human surgery, it is the common covering for sores; but tow is the finest substance used for veterinary purposes.

**LINUM CATHARTICUM**, purging flax, or mill-mountain; a very small plant, not above four or five inches high, found wild upon chalky hills and in dry pasture-grounds. Its virtue is expressed in its title. An infusion, in water or whey, of a handful of the fresh leaves, or a drachm of them in substance when dried, are said to purge without inconvenience.

**LIPPIL**, Egyptian small purple flowering centaurea, a species of *centaurea*.

**LIPPITUDO**, a disorder of the eyes, from a decay or obstruction of their natural moisture, which makes them feel dry, and appear angry and red, commonly called *blear-eyed*.

**LIPS OF A HORSE.** See **MOUTH**. If they are thin and small, they contribute to a good mouth, but the contrary if they are large and thick. A horse is said to *arm* or *guard* himself with his lips, when they are so thick as to

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cover the bars, and keep off the pressure of the curb.

**LIQUAMEN**, any thing capable of melting. It is generally used to express such unctuous substances as are procured by melting.

**LIQUATION**, or **LIQUEFACTION**, which signify the same (from *liquefacio*); melting.

**LIQUID**, or **LIQUIDITY**, such a property in bodies as is also expressed by fluidity; but this, somewhat further than that, also supposes a power of wetting, which all fluids have not. This proceeds from a peculiar configuration of particles, which disposes them to adhere to the surface of bodies which are immersed into them.

**LIQUOR**, a pharmaceutical appellation given to some volatile fluids used in medicine; such as the *liquor anodynus mineralis Hoffmanni*, which is an ethereal spirit.

**LIQUOR AMNII**, the fluid in which the fœtus swims during gestation.

**LIQUORICE**, the *glycyrrhiza glabra* Linn. The root of this plant is produced plentifully in all the countries of Europe. That which is the growth of our own is preferable to such as comes from abroad; the latter being generally mouldy, which this root is very apt to become, unless kept in a dry place. The powder of liquorice, usually sold, is often mingled with flour, or with substances not quite so wholesome. The best sort is of a brownish yellow colour (the fine pale yellow being generally sophisticated), and of a very rich sweet taste, much more agreeable than that of the fresh root. Liquorice is almost the only sweet that quenches thirst, whence it was called by the Greeks *adipson*; but then it must be chewed some time after it has lost its sweet taste, for then it gives out its acrid and bitterish matter, which stimulates the mouth and fauces, so as to produce an excretion of fluid, and thereby take off the thirst which the sweetness had produced.

Infusions or extracts made from it afford very convenient vehicles for the exhibition of other medicines; its taste concealing that of unpalatable drugs more effectually than any other saccharine substance.

Liquorice is thought to possess some *pectoral* qualities, and in this character appears frequently, with other ingredients, in veterinary prescriptions.

An extract from it is directed to be made in the shops; but this preparation is brought chiefly from abroad, under the name of *Spanish juice*, or *Spanish liquorice*. But the foreign ex-



tract is not equal to such as is made with proper care among ourselves.

**LITHARGE.** See **LEAD**.

**LITHAGOGUS** (from λιθω, *a stone*, and αγω, *to bring away*), an epithet for a medicine that expels the stone.

**LITHIASIS** (λιθιασις, from λιθος, *a stone*), i. e. the gravel in the kidneys, and stone in the bladder.

**LITHIATES**, salts formed by the union of the lithic acid, or stone in the bladder, with the different alkaline, earthy, and metallic bases. There are twenty-four species enumerated in M. Fourcroy's Elements of Natural History and Chemistry.

**LITHOIDES** (λιθοειδης, from λιθος, *a stone*, and ειδος, *form*), an epithet for the os petrosum. It is so called from its hardness.

**LITHONTRIPTICS** (λιθοντριπτικος, from λιθος, *a stone*, and τριβω, *to wear*), such medicines as, by their solvent qualities, dissolve or break down calculi, when generated in the body, and also forward their discharge out of the part or cavity in which they are lodged.

**LITHOTOMY** (λιθοτομια, from λιθος, *a stone*, and τεμνω, *to cut*), the operation of cutting for the stone.

**LIVER**, in anatomy, a glandular substance, and by far the largest that is to be met with either in men or quadrupeds. It is of a dusky red colour, and in some places a little variegated or shaded. It is seated on the right side of the abdomen, immediately under the diaphragm or midriff. In a horse it is divided into seven lobes, whereby it is preserved from being hurt by any violent motion. The right lobe is the largest. The outside is convex, and its inside concave or hollow, to make way for that portion of the stomach and intestines which lie under it. The upper part is much thicker than the lower, and all its edges extremely smooth, so that it can in no way injure the other viscera. It is also secured by ligaments: one from the diaphragm; a second, or a portion of the same, from the breast-bone, by which means it can neither fall downwards nor sideways; and the umbilical vein, by which the foetus is nourished, becomes its suspensory or third ligament; so that it can neither push forwards in galloping or going down hill, nor press too hard upon the soft parts that lie under it. One use of the liver, as Gibson supposes, is to warm and comfort the lower part of the stomach, and possibly it may in some measure contribute to digestion; but its chief use is for the secretion of bile. See the article **BILIS**.

**LIVIDUS**, so the pectinæus muscle is sometimes called, from its livid colour.

**LIX**, pot-ash, or wood-ash.

**LIXIVIUM**, a liquor made by the infusion of ashes, or any burnt vegetable, which is more or less pungent and penetrating as it is impregnated with the salts. What is left, after the evaporation of such a liquor, is called *lixivial* or *lixivate salt*; such as all those are which are made by incineration. A more simple way of forming a lixivium is by dissolving pot-ash, or **KALI**, in water, which may thus be conveniently made of any degree of strength.

**LOBE**, signifies any body of a roundish shape: in anatomy, different parts of the body are thus distinguished, as the lobes of the lungs, liver, and the like; which parts see under the proper names.

**LOBELLUS**, or **LOBULUS**, a small lobe. The small cells of fat are called *lobuli adiposi*; and the extremities of the bronchia, which end in little knobs, are called *lobuli pulmonum*.

**LOCALES**. Thus Dr. Cullen names one of his classes of diseases. It is when a disease occupies only a portion of the system, or when a part only, and not the whole body, is affected.

**LOCH**, or **LOHOCH**, are Arabian names for those forms of medicine which are now commonly called **LAMBATIVES**, **LINCTUSES**, &c.

**LOCHIA** (λοχεια, λοχεια), such evacuations as take place after parturition.

**LOCHIORRHŒA**, an excessive discharge of the lochia, after they become pale or whitish.

**LOCKED JAW**, a tetanic or spasmodic disease, to which horses of all ages are liable. It is more frequent in hot than in cold climates, and the symptoms of it are there more severe. The most common causes of locked jaw are, punctures of different tendinous parts, attended with some injury of the nerves supplying those parts, and producing an universal irritation of the nervous system, accompanied with a greater or less degree of spasm in the whole of the muscular powers. The operations of nicking and docking also occasion it, more particularly the latter, and these especially in frosty or other severe weather. Other causes are, cold applied to the body when hot; journeys in bad weather, after having been indulged a long time with a hot stable and clothing. Horses pricked in shoeing are also liable to locked jaw. From the sympathy known to exist between the stomach and the brain, bots and other worms have been supposed sometimes to give birth to this disease, by adhering to and wounding the nervous coat

of that organ. But locked jaw will frequently occur independently of any apparent reason. It sometimes proceeds to a violent degree very suddenly; in other instances very gradually only. Previously to an absolute state of locked jaw, some rigidity is to be perceived in the muscles of the neck: as this proceeds, the extremities begin to undergo a simular effect; the legs become stiff, and are drawn much apart; the ears and tail are erected, the nostrils expanded, and the eyes fixed, displaying, in appearance, an unusual and considerable fire and animation. Much difficulty seems to be experienced in deglutition, the abdominal muscles are strongly affected with spasm, and the body is drawn or *tucked up*. The bowels are generally obstinately costive, and the respiration is usually more or less influenced by the disease. In all spasmodic affections of the muscles, acute pain is experienced, causing an irregular state of the pulse. There is a deficiency in the secretion of the urine in this disease, but no diminution seems to take place in the appetite.

There are but few veterinary practitioners, probably, who can boast of having been very successful in the treatment of locked jaw. Though they may be well acquainted with its most prevailing symptoms, the method of cure yet remains an object highly worthy of the exertions of laudable enquiry. Perhaps some future period may give to the world a certain remedy for this dreadful malady; and such an event would be not less desirable to human than to veterinary medicine.

For the cure of locked jaw, the greatest extremes of heat and cold have been recommended; such as supporting a high state of perspiration in the animal for several hours, by covering the body in blankets, &c. or immersing the patient for a length of time in snow or cold water. We have heard of advantages attending both these methods, and we have had a few opportunities of giving each of them a fair trial; not, however, with that benefit that we could have wished. It will be here necessary, notwithstanding, to point out the most probable means of success. We are convinced, that, in cases of locked jaw, opium, in large doses, is the remedy on which our hopes are principally to be founded: it may be given, indeed, in very large quantities in all spasmodic diseases, without being attended with those hurtful consequences it is commonly accompanied with on other occasions. The doses ought to be repeated as the power of them appears to wear off. In the infancy of the disease, where the pulse will justify

it, by indicating an inflammatory propensity, bleeding is required; but, without this precaution, the practice is now generally considered as improper. A costive state of the intestines will certainly tend to aggravate the complaint; so that, by relaxing them, we may probably promote a relaxation in other parts. Therefore, when we are not prevented by the closeness of the jaws, or the difficulty of deglutition, and when costiveness exists, the following drench may be given every six hours, until it operates.

Take of thin gruel of oatmeal, one pint;  
Castor oil, or  
Olive oil, twelve ounces;  
Glauber's salt, four ounces.

Dissolve the salts in the gruel, whilst warm, and afterwards mix the whole into a drench.

Spasmodic diseases are such as allow the loss of but little time; of course, before we can possibly perceive the consequence of this apert treatment, it behoves us to employ, in the mean while, other useful medicines.

Let the following ball be given every three or four hours, or as often as the state of the case may demand.

Take of Purified opium, three drachms:  
Salt of hartshorn,  
Camphor, of each half an ounce;  
Syrup, sufficient to make the ball.

We have already remarked, that costiveness is to be avoided as much as possible: laxatives, independent of other utility in the above complaint, will beneficially counteract the astringent quality of opium. So far we have been treating of the disease as in its most favourable stage. When the jaws are already so far closed as to prevent the admission of medicines, the only means left are the introduction of them in clysters. Of these, a laxative one, as the following, may be given, at the discretion of the practitioner.

Take of thin gruel, four quarts;  
Common salt, six ounces;  
Olive oil, or  
Hog's lard, four ounces.

Dissolve them together, and administer in the usual manner.

We cannot precisely ascertain the quantity of the opiate that can be administered in this way to the horse with safety: we conceive, however,



that it is pretty considerable. The following may be injected without danger every three or four hours.

Take of Oatmeal-gruel, one quart;  
 Purified opium, six drachms;  
 Spirit of hartshorn, one ounce and  
 a half;  
 Camphor (previously rubbed into a  
 liniment with a little spirit of  
 wine), one ounce.

Dissolve the opium first in the gruel, and mix the whole well together.

It is necessary to remark, that this composition can prove but of little utility during the active operation of the laxative clyster; and, of course, it should be contrived that these very opposite remedies interfere as little as possible with each other.

Notwithstanding we have not yet been lucky enough to witness the success of the application of cold water to the surface of the bodies of horses labouring under locked jaw, our hopes of its beneficial tendency are still sanguine; and we are induced to think the more favourably of it from the encouraging reports communicated to us by others. In similar diseases of the human subject, its use has been attended with the most beneficial consequences. Immersion in cold water is readily accomplished; but, perhaps, the most efficacious method would be that of pouring large streams of water on the animal, after the manner so successfully practised by Mr. Moorcroft (see the article *BALNEA*). This process should be continued for a considerable time, perhaps ten or fifteen minutes; and, should a remission of the spasms ensue, it will afford us no little encouragement in our pursuit; and, in this interval of ease, a favourable opportunity will present itself of passing medicine by the gullet. When the complaint returns with any degree of violence, the cold water is to be repeated: the longer and the more frequent the remissions become, the nearer, of course, will be the prospect of a cure. Immediately after the application of the cold water, let the skin undergo a diligent and general friction until it is dry; let the animal be then moderately clothed. We have already hinted, that horses, suffering from the above disease, have generally the inclination, though perhaps they have not the power, to eat: they are therefore to be supported by substantial gruel, given, when incapable of swallowing, by the anus.

If this circumstance is sufficiently attended to, the animal may be kept alive many days.

Here, however, a question occurs to us—Whether, in any case of locked jaw, either in the human or brute species, the throat is *absolutely inaccessible to nutritious fluids*? We think not; but that milk, gruel, broths, and even porridge, might be conveyed by injection between the intervals of the teeth, and drawn in, in some quantity, by the patient, provided the power of swallowing remain.

We have here endeavoured to describe such means of relief as have appeared to us to offer the greatest prospect of success. All rational experiments towards the removal of a malady, usually fatal in its termination, are certainly praise-worthy; and he who is the most fortunate in his researches will have a weighty claim indeed on the gratitude of society.

The introduction of mercury into the system, in persons affected with spasmodic diseases, by frictions, on different parts of the body, with strong ointment of quicksilver, so as to produce and support a degree of salivation, has been sometimes attended with the happiest effects. We have never heard of this experiment being tried on the horse, but certainly it deserves the practitioner's attention.

The warm bath, in spasmodic diseases, has many advocates: perhaps it might be beneficial, if it could be used to that extent with the horse which it admits of with the human subject. When locked jaw is conjectured to have arisen from the operation of docking, it is usually considered prudent to remove another portion of the tail; afterwards applying such dressings as are most likely to hasten a free discharge of matter from the stump. The same dressings may be recommended when nicking is suspected to be the cause of the disease, and the extremity may be also surrounded with a large poultice. Few owners of horses, we fancy, would allow of a total amputation of the tail, and, probably, even that would not be followed by the slightest benefit. Where the disease arises from the foot having been pricked in shoeing, the wound should be opened freely to the bottom with a drawing knife; the actual cautery may then be applied, and the part scalded with a little turpentine as a dressing. All punctures should be laid tolerably open, and digestive applied; and, where an inflammation and swelling attend, fomentations are requisite. Let it be remembered, however, that these topical means *alone* are never to be depended upon; but must, in locked jaw, be invariably assisted with the remedies here-

tofore mentioned. Should it be imagined that botts, or other worms, lodged in the stomach or intestines, have produced the disease (a circumstance which we are apprehensive is rather difficult to determine), a drachm of calomel may be given in one of the balls, or an ounce of the strong mercurial ointment may be dissolved in the first anodyne clyster.

In conclusion, we may observe, that we have witnessed the recovery of a few mild cases of locked jaw, in which scarcely any means of relief have been employed, except turning the horse into the cold air: indeed, such cases so frequently terminate fatally, that the owners of horses thus diseased generally leave them to their fate. In the above instances, considerable rigidity existed in the muscles; the act of deglutition was slightly obstructed, but not prevented; and the jaws were only partially drawn together. On these occasions, the complaint could seldom be traced to any particular source.

**LOCKS**, or **ENTRAVONS**, in the manege, pieces of leather, two fingers broad, turned round and stuffed on the inside, to prevent their hurting the pastern of a horse, round which they are fixed. An *entrave* is composed of two *entravons*, joined by an iron chain seven or eight inches long.

**LOCUSTA**, the grass-hopper; also the outer covering of the flower and grain of corn, which incloses the chaff. It is also a name for one species of *valeriana*, or *lamb's lettuce*.

**LOHOC**. See **LOCH**.

**LOLIUM**, darnel-grass, a genus in Linnæus's botany. He enumerates four species.

**LOMENTUM**, bean-meal, or bread made thereof.

**LONGCHITIS** (from *λγχη*, a lance, because the leaves are sharp-pointed, and resemble the head of a lance), a genus in Linnæus's botany, in the order of *filices*, or ferns. He enumerates four species.

**LONG-JOINTED**. This term, applied to a horse, denotes that his pastern is slender and pliant. Long-jointed horses are subject to wind-galls.

**LONGEVITY**, the prolongation of life, in man and other animals, beyond the natural period. Instances of this have occurred in the former, and we hear of them occasionally in horses, and some other quadrupeds; though the accounts of the latter are rendered somewhat uncertain from the want of knowing what is the natural extent of the existence of different animals. The great abridgement of that period to which their domestication and services expose

them, presents another obstacle, as well as the rareness of the instances of their being suffered to live after they cease to be useful. It is well known, that the term of the life of a horse is very much shortened in the domestic state.

**LONGISSIMUS DORSI**, a muscle of the back, that, at its beginning, is not to be separated from the sacro-lumbalis, arising with it from the hinder part of the spine of the ilium, and upper part of the os sacrum, and, as it ascends, it gives tendons to each transverse process of the vertebræ of the loins, thorax, and neck. In conjunction with some others, this helps to keep the body erect. This muscle in the horse is shewn in Plate X. See also the explanation of parts composing "*the trunk*," under the article **HORSE**.

**LONGITUDINAL**, an anatomical term, opposed to *transverse*.

**LONGUS COLLI**, a muscle that is fastened to the five upper vertebræ of the back, and to all those of the neck; but because the last are more moveable than the first, therefore they are its insertion, and those of the back its origination. This helps to bend the neck. A representation of it in the horse is given in Plate XIII. See the description of parts "*in the neck*," under the article **HORSE**.

**LONGUS CUBITÆUS**, a muscle that, in conjunction with others, extends to the cubitus in the human subject. It arises from the inferior costa of the scapula, near its neck, and passes between the two round muscles. It descends on the back-side of the humerus, where it joins with the *brevis* and *brachiiæus externus*.

**LONGUS MINOR**. For this muscle in the horse, see Plates X. and XV. and the description of parts "*in the shoulder*," under the article **HORSE**.

**LOOSENESS**. See the article **DIARRHŒA**.

**LOPEZIANA RADIX**; *radix Indica a Joanne Lopez denominata*; *rais di Juan Lopez Lufitanis*. It is the root of an unknown tree, but lately received in the Edinburgh Pharmacopœia. It is said to be efficacious in diarrhœas, and that not from its astringency, but its antispasmodic power. The powder, or a tincture made with proof spirit, are alike useful.

**LOPHADIA** (*λοφαδια*, *λοφια*), or **LOPHIA**, names of the first vertebræ of the back. *Lophia* also sometimes signifies the upper part of the back of the neck.

**LORDOSIS** (*λορδωσις*). It is when the spine bends towards the fore parts: when applied to the bones of the legs, it signifies *bow-*



legged. It is also a name for the *lumbago*, and the *tabes dorsalis*.

LORICA, a kind of lute, with which glafs retorts, &c. are coated, before they are put into the fire.

LORINA MATRICIS, an epilepsy, or convulsive disorder, proceeding from the uterus.

LOTION (*lotio*, from *lavare*, to wash), a topical form of medicine, usually consisting of watery solutions or other fluid materials. With these the part is either washed occasionally, or treated with linen cloths dipped into them and laid on. Goulard's lotion is an example.

LOTUS, bird's-foot trefoil, a genus in Linnaeus's botany. He enumerates eighteen species, and five varieties.

LOUSINESS, an affection of the skin, arising, in cattle and other animals, from the irritation of lice or other animalculæ, which may be distinguished with the naked eye. Almost all animals, and even insects, are subject to this annoyance. Mercurial applications of all kinds destroy them with certainty, and need not be made strong by any means to effect this object. Quicksilver ointment, joined with an equal quantity of lard, will do it; but a more cleanly remedy is corrosive sublimate (*hydrargyrus muriatus*), dissolved in boiling water, in the proportion of a drachm to two quarts. Lice in cattle, it is said, may be destroyed by anointing them with oil of turpentine, mixed with linseed oil, and some of the flowers of sulphur. Some even rely upon soap mixed with tar, or tar-water; and some use hellebore. See HELLEBORE.

LOW. To CARRY LOW, in the manege. See CARRY.

LOYAL. In the old manege, a horse was said to be *loyal*, that freely bent all his force in performing any manege he was put to, without defending himself or resisting, notwithstanding any severity used. The term, a *loyal* mouth, also implied excellence with regard to a full rest upon the hand.

LOZENGE, a form of medicine made into small pieces, to be held or chewed in the mouth till melted or wasted.

LUBRICITY, a property chiefly of fluid bodies, which makes them soft and yielding, as in oils, and the like, from *lubricitas*, *slipperiness*.

LUCERNE, one of the artificial grasses, much cultivated of late, in consequence of its excellent properties as green fodder for cattle. It is a species of *medicago*.

LUES, the pestilence or plague in man, and the murrain in beasts.

LUMBAGO (from *lumbi*, the loins, and *ago*, to act), a disease the symptoms of which are pains that are very troublesome about the loins and small of the back. These often precede ague-fits and fevers, and most commonly are attended with yawning, shuddering, and erratic pains in other parts, which go off with evacuation, generally by sweat, and other critical discharges. The most common species of lumbago, however, is the *rheumatic*.

LUMBALIS, or LUMBARES INTERNUS. Names for the *psoas* muscle.

LUMBARES ARTERIÆ. They go up posteriorly from the inferior descending aorta, in five or six pairs, or more; the upper ones send branches to the neighbouring parts of the diaphragm and intercostal muscles, and supply the place of semi-intercostal arteries. They are distributed also to the *psoas*, and other adjacent muscles, and, by perforating the oblique muscles, they become external hypogastric arteries. They also go to the vertebral muscles, and enter the spinal canal.

LUMBARES VENÆ. Sometimes they proceed from the vena cava, near the bifurcation, principally on the right side; sometimes they proceed from the left iliac vein: this branch communicates with the azygos and the intercostal veins.

LUMBARES GLANDULÆ. See LACTEALS. Some arteries, veins, &c. are also called *lumbares*, while they are in their passage through the loins.

LUMBARES NERVI, the lumbar nerves. They pass out from the spinal marrow through the vertebrae of the loins. They become larger from the first to the last. The first lumbar nerve throws out a large branch backwards, and two filaments to the intercostal; the trunk of the nerve goes through the *psoas* muscle, then to the spine of the os ilium, at whose anterior superior process it throws off several branches, which go to the adjacent muscles, to the spermatic cord in men, and the round ligament in women, &c. The second lumbar nerve lies on the side of the *psoas* muscle, runs along it, then goes through the annular aperture of the obliquus externus to the scrotum in males, and the labia in women. The second lumbar nerve joins with the third, and that again communicating with the fourth, form the crural nerve. The fourth and fifth lumbar nerves, and the three first sacral, form the sciatic nerve, which passing out at the great sciatic notch, runs down between the tuberculum ischii and trochanter major, along the internal and posterior

part of the thigh, between the biceps and seminevrosus, as far as the ham.

**LUMBARIS**, the region of the loins. It is the posterior part of the abdomen, and comprehends all that space which reaches from the lowest ribs on each side, and last vertebra of the back, to the os sacrum, and neighbouring parts of the ossa ilium. The lateral parts of this region are termed *the loins*. The lumbar region takes in likewise the musculus quadratus lumborum on each side, the lower portions of the sacro-lumbaris, of the longissimi and latissimi dorsi, the musculus facer, &c.

**LUMBARIS INTERNUS**, i. e. *musculus psoas magnus*.

**LUMBARIS EXTERNUS**, i. e. *quadratus lumborum*.

**LUMBRICI**, the round worms. See the article **WORMS**.

**LUMBRICI LATI**, tape worms. See **WORMS**.

**LUMBRICUS TERRESTRIS**, the earth worm. See **WORMS**.

**LUNA**, in the language of the old chemists, signifies silver, from the supposed influence of that planet (*the moon*) upon it. The medicinal virtues of this metal are none at all, until it has undergone some chemical preparation. The nitrated silver, or *lunar caustic*, is used in medicine.

**LUNA CORNEA**. If to a solution of silver in the nitrous acid, the marine acid be added, it seizes on the silver, and falls down with it in form of a thick coagulum, to which the name of *luna cornea* has been given. This precipitate, exposed to the fire in a crucible, easily melts, and in cooling fixes into a grey yellowish mass, which has always been thought to be flexible like horn, but is not so in reality.

**LUNAR CAUSTIC**, one of the mildest caustics, now called *nitrated silver*. See **SILVER**. This is useful as an application to ulcers where fungous parts are to be destroyed, or a new action excited. But to the sores of horses, and other large animals, more active and less costly escharotics are usually applied; such as corrosive sublimate, blue vitriol, &c.

**LUNARE OS**, the second bone of the first row in the human wrist. It is so called because one of its sides is in the form of a crescent.

**LUNATIC**, or **LUNACY**, madness in the human subject; from *luna*, *the moon*; because it has been, and still is, an opinion, that insane persons were much influenced by that planet. On this subject, sound philosophy has taught us that there is something in it, though not all that the ancients imagined; no-

thing, in fact, otherwise than what results in common with the action of other heavenly bodies, which occasion alterations in the gravity of our atmosphere, and thereby affect human bodies. Animals not endowed with the gift of reason are, of course, incapable of mental alienation.

**LUNATIC**, a name by which a moon-eyed horse has been quaintly called. See **MOON-EYES**.

**LUNETTE**, a half horse-shoe, or such a one as wants that part of the branch which should run towards the quarter.

**LUNETTE** is also the name of a shade, consisting of two small pieces of felt, made round and hollow, to cover the eyes of a vicious horse that is apt to bite, and strike with his fore feet.

**LUNGS**, or **LIGHTS**, in anatomy, consist of two lobes that fill up the greatest part of the chest, having the mediastinum between them. In some quadrupeds, each lobe is subdivided into several small lobules, in the same manner as their livers, but not so much in a horse as in other animals that have a greater variety of motions. Gibbon supposes this may be the reason why horses' lungs are so apt to be inflamed with hard exercise, and in consequence of cold. The aspera arteria, trachea, or wind-pipe, descending along the fore part of the throat, is branched out into the lungs. This pipe is composed of circular rings of cartilage or gristle, which surround it for about two thirds of its circumference; the back part being plain, smooth and even, that it may not incommode the œsophagus or gullet, which passes down immediately behind it, and on which it lies. At its entrance into the chest, it is divided into two principal branches, called its *bronchia*; and is afterwards subdivided into innumerable other branches, the extremities of which compose an infinite number of small cells or air-bladders, which, with the ramifications of the veins, arteries, nerves, and lymphatics, make up the whole mass or substance of the lungs. These cells or vesicles are always filled with air, and distended in inspiration, and empty or sunk in expiration; and receive from the blood-vessels a quantity of lymph, or perspirable matter, which not only keeps the lungs from drying, but makes a large and necessary discharge from the blood. The lungs may justly be reckoned among the principal organs of the body, if not the chief of all; as they are adapted in every respect to receive air, without which we cannot support life one moment; and are no less fitted to communicate oxygen to the blood by their continual action, and also to make such discharges of aqueous vapour and



mucus as are necessary for the preservation of health, as well as for the continuance of life. The lungs are also the chief instruments of the voice in all creatures; and, by drawing the effluvia through the nose, contribute greatly to the sense of smelling. The lungs are subject to various diseases, as PERIPNEUMONY, ASTHMA, CATARRH, &c. See those articles.

LUPUS, strictly signifies the wolf, or wild dog; but some persons have figuratively applied it to a grievous eating ulcer, like the *phagedæna*. The cancer is thus named by some.

LURCHER, a kind of hunting dog, much like a mongrel greyhound, with pricked ears, a shagged coat, and generally of a yellowish white colour. These are very swift runners, so that, if they get between the burrows and the rabbits, they seldom miss taking their prey; and this is their common practice in hunting: yet they use other subtleties, as does the tumbler, some of them bringing in their game, and those are the best. It is also observable, that a lurcher will run down a hare at stretch.

LUTE, a mixture of several adhesive substances together, to close the juncture of vessels in distillation; from *lutum*, clay.

LUXATION (from *luxo*, to dislocate, or put out of joint); also called DISLOCATION. It is a removal of the head of a bone from its proper cavity to another situation, by which voluntary motion is hindered. This removal of an articulated bone from its cavity is either total or partial: hence some have called the former only, a *luxation*, and the latter a *distortion*; but a partial luxation is properly termed a *subluxation*, because a distortion denotes a change in the situation of the muscles. Another division is into the simple and compound luxations: the first has been described above; the last is when a wound or fracture, a contusion, or other marks of violence, attend.

Luxations seldom proceed from any other than an external cause. When a luxation happens from an external injury, the diagnostics are sometimes uncertain; because a violent contusion or distortion may render the joint tumid, which, with the pain, will obscure the evidences of a luxation. However, the more readily to discover a luxation, it may be observed, that, when the head of a bone is removed out of its place, the other end will be distorted in an opposite direction; for, when the superior end is outwards, the inferior will be inwards, and *vice versa*. Further, a tumour is generally observable where the dislocated part of the bone is seated, and an hollowness where it

receded from; though, where there is much flesh, the tumour and cavity are not easily perceived.

Various symptoms occur in consequence of a luxation; but these are somewhat different, as the parts are different in which the accident hath happened: in general, they are an immobility, or, at least, a defective motion of the dislocated limb; a distraction of some part of the adjacent muscles, and a relaxation of others; a torpor of the subjacent parts; a compression of the adjacent vessels, whence pain, inflammation, and spasm, arise.

The principal indications of cure are, 1st, to reduce the luxated part; and, 2dly, to retain it in its proper situation. But, if inflammation or tumour are considerable, these should be removed before a reduction is attempted. In reducing luxations, the muscles should all be put into a state of the greatest relaxation. The resistance of the muscles is the only cause of the difficulty of reducing luxations: hence much force is never required, provided the muscles are relaxed by a proper position of the limb; for, in recent cases at least, the capsular ligament will rarely if ever impede. The extension should be gradual and continued, until the dislocated bone is on a level with the cavity from whence it receded; at which time, if the head does not return of itself, it must be assisted by pressing upon it, and making a lever of the dislocated bone.

LYCOCTONUM, the yellow poisonous aconite, a species of *aconitum*.

LYCOPERDON, puff-ball. The ancients gave it this name, because they thought it sprung from the dung of the wolf. Puff-ball is a genus in Linnæus's botany, of the order of *Fungi*. He enumerates nineteen species. The *lycoperdon bovista* Linn. or *duffy mushroom*, contains a black powder, which has strong properties of a *styptic* nature.

LYMPH, or LYMPHA, is generally used for such a transparent fluid as water; and therefore, in anatomy, it denotes the contents of the vessels called

LYMPHÆDUCTS (from *lymphæ*, water, and *duco*, to convey); i. e. LYMPHATICS.

LYMPHATIC GLANDS. See LYMPHATICS. These glands are round and smooth bodies, about the size of an hazel-nut, bigger or less, according to the number of lymphatics they receive. Their substance is membranous, which divides the whole bulk into little cells that receive the lymph from the lymphatics; and therefore they are improperly called glands,

because they separate no liquor from the blood. It is true, that the exporting lymphatics, communicating with their arteries, do receive a lymph from them; but this is done without the help of conglobate glands, as the lacteal veins do with the capillary arteries of the intestines: and the chief use of these vesicular bodies seems to be, that the slow-moving lymph may receive a greater velocity from the elastic contraction of their membranous cells, as well as from the new lymph immediately derived from the arteries.

**LYMPHATICS, or LYMPHATIC VESSELS,** called by the French *depôt lacteux*. The lymphatics arise from the surface of the cells of the membrana cellularis, the surfaces of the intestines, of the urinary and gall bladders, and of all other parts, and carry a pellucid liquor towards the receptaculum chyli and thoracic duct, in which they all terminate. The coats of these vessels are thin and transparent, they are much crowded with valves, and very irregularly distributed. The lymphatics frequently anastomose, and in their way pass through the lymphatic glands. Before they enter a gland they ramify, and, coming out in branches, unite again. They are general absorbents, and carry the juices to the duct, the receptaculum, and to the left subclavian vein, in the human subject.

Both in men and quadrupeds, their system consists of the *lacteals*, the *lymphatic vessels*, the *conglobate glands*, and the *thoracic duct*. We shall describe them as they occur in the former; merely observing, that the analogy obtains much in the same degree as in the blood vessels.

The lacteals begin from the intestinal tube. The lymphatic vessels arise from most parts of the body. The course of the lymph and of the chyle is from the extreme parts of the body towards the centre. The lymphatics commonly lie close to the large blood-vessels of the extremities. All the lacteals, and most of the lymphatics, open into the thoracic duct, which lies upon the spine, and runs up towards the neck, where it commonly opens into the angle between the jugular and subclavian veins of the left side; and thus both the chyle and the lymph are mixed with the blood.

The lacteals, the lymphatics, and the thoracic duct, all agree in having their coats more thin, and more pellucid, than those of the blood-vessels. But, although their coats are so thin, they are very strong. Mr. Sheldon says, that both the lacteals and lymphatics have a dense internal coat, which is smooth and polished on the inside; it is connected by a reticular substance on its outside, to the internal surface of the middle

coat. This fine internal membrane prevents the transfusions of the lymph and chyle, and produces certain duplicatures internally, which form the valves found in every part of this system, and it is exactly similar to the internal coat of the veins. The second coat, Mr. Sheldon thinks, consists chiefly of muscular fibres, running in every possible direction; the greater number take the circular direction, and surround the internal membrane. He adds, that an outward coat may also be separated, which is made of a membrane similar to the pleura or peritonæum.

The coats of the lacteal and lymphatic vessels have, in common with all other parts of the body, arteries and veins for their nourishment. They have also nerves. From the blood-vessels running through them, they are subject to inflammation, and, from their numerous nerves, they are as irritable as any set of vessels in the human body. The lymphatic vessels abound more with valves than the veins do; these valves are generally two in number, and are of a semilunar shape. In most parts of the body the valves are so numerous, that there are three or four pair in the space of one inch, but sometimes there is no more than one pair.

The lymphatic system, in different parts of its course, has the glands called conglobate, or lymphatic. These glands are so placed, that the vessels come in on one side, and pass out on the other, in their way to the thoracic duct.

The lymphatic vessels of the lower extremities are those that are superficial, and those that are more deeply seated. The superficial ones lie between the skin and the muscles, and belong to the surface of the body or the skin, and to the cellular membrane, which lies immediately under it; one branch of the superficial ones runs upon the top of the foot, another is generally found just under the inner ankle. The branch on the foot runs up on the outside of the tendon of the tibialis anticus, until it has got above the ankle; and running over the shin bone, it divides, and forms a plexus, still ascending in the cellular membrane to the inside of the knee, from whence it still advances up the inside of the thigh under the skin, and, arriving at the groin, enters the lymphatic glands situated there. These glands are six, seven, or eight in number; of these, some lie in the very angle between the thigh and the abdomen, and others lie a few inches down on the fore part of the thigh. It is into these upper glands alone that the lymphatic vessels of the genitals enter, so that the venereal bubo, which arises in consequence of an absorption of matter from these organs, is always seated in those upper glands; and the lower



glands are never affected, except by the regurgitation of the matter, or from their vicinity to the glands first diseased, which very rarely happens. And as the upper glands are affected from the genitals, so the lower are usually first affected from the absorption of the acrid matter of an ulcer, &c. in the parts below them. The lymphatic vessels of the genitals having joined those of the thigh, a net-work is formed, which enters the abdomen under the edge of the tendon of the external oblique muscle, called Poupart's ligament: some branches of this plexus embrace the iliac artery. These superficial lymphatics, probably, are the trunks of these vessels which absorb from the skin and the cellular membrane immediately under it; and as no considerable branches can be distinguished on the outside of the leg or thigh, it is probable that all the lymphatic vessels of those parts bend towards the inside. Upon these vessels, from the foot to the groin, there is commonly not one lymphatic gland; but to this there are sometimes exceptions. Besides these superficial lymphatic vessels, which lie above all the muscles, or in the cellular membrane under the skin, there is a set deeper seated, that lie amongst the muscles, and accompany the crural artery.

The lymphatics of the lower extremities having reached the trunk of the body, and passed under Poupart's ligament, appear upon the sides of the ossa pubis, near the pelvis. A part of them passes up along with the iliac artery upon the brim of the pelvis; and another part dips down into the cavity of the pelvis, and joins the internal iliac artery near the sciatic notch. At this place they are joined by the lymphatics from the contents of the pelvis. Besides those lymphatic vessels which dip down into the cavity of the pelvis, on the inside of the external iliac artery, there are others which keep on the outside of that artery upon the psoas muscle; of these, one part passes up to the loins, and goes under the aorta in different branches, getting from the left side to the right, and joining the thoracic duct. Another part passes under the iliac arteries, and appears upon the os sacrum, making a beautiful net-work, joining the lymphatics of the right side, and passing under the iliac artery, to form the net-work upon the upper part of the right psoas muscle. The lymphatic vessels of the right side, joined by some from the left, having reached the right lumbar region, appear there in the form of a plexus of large vessels, and pass through several glands. At this part they receive likewise large branches under the aorta, from the plexus on the left side of the loins; and having at last got up as

high as the second lumbar vertebra, they all join, and form a single trunk, called the thoracic duct: at this part they are likewise joined by the lacteals.

Into the thoracic duct likewise enters the lymph of the other abdominal viscera. This is brought by a number of vessels, a plexus of which may be traced from each kidney, lying principally behind the emulgent artery, and opening into large lymphatic vessels near the aorta: with these also go the lymphatics of the glandulae renales, or renal capsulae.

The lymphatic vessels of the spleen, stomach, and other viscera, are generally distributed in two sets, and, for the most part, take the course of the blood-vessels; but a minute description of them would scarcely be useful.

As the leg, in the human subject, so *each arm*, has two sets of lymphatic vessels; one set, which lies immediately under the integuments, belongs to the skin and the cellular membrane, connecting it to the muscles; the other accompanies the large arteries, and belongs to the parts deeper seated.

The lymphatic vessels delineated by anatomists are, in general, only to be considered as the trunks of the lymphatics; since it is probable, that every (even the smallest) part of every animal body has one of these vessels adapted to absorption. That this is the case seems to be proved by the experiments made on the human subject with variolous matter: for at what part soever that matter is inserted, the lymphatic vessels take it up, and carry it into the body, as can be traced by its inflaming the conglobate glands through which these vessels pass. Besides, it is by the action of the absorbent system that many other noxious materials are introduced into the habit, as the miasmata of fevers, &c.

It is well known, that the lymphatics are subject to disease, and that their functions are variously affected by inflammation and other causes. But these have not been sufficiently traced in the human subject to supply us with any account that would either serve or gratify the veterinary practitioner.

LYRA (*λυρα*). Thus the ancients called the inferior surface of that part of the brain which is called the *foramen*, because it is full of medullary lines, resembling the strings of the lyre.

LYSSA (*λυσσα*, or *λυττα*), strictly signifies the madness of a dog, which is communicable by his bite, but is more laxly applied to the bite of any venomous creature; whence the *pulvis antilyssus*, in the former London Dispensatory, takes its name, as being accounted good against such evils.

# M.

## M A C

**M.** or m. This letter in a physician's Latin prescription is frequently used to signify a handful, and is sometimes also put at the end of a recipe for *misce*, i. e. *mingle*, or *mixture*, a mixture. Thus *m. f. Julapium*, signifies mix, and make a julep.

**MACE**; the middle bark of the nutmeg. It is of a lively red colour when fresh, but grows paler with age. It envelops the shell which contains the nutmeg. It is dried in the sun upon hurdles, which are fixed one over another, and then it is sprinkled with sea-water to prevent its crumbling in carriage. It has a pleasant aromatic smell, and a warm, pungent, bitterish taste. Its qualities are similar to that of nutmeg, both as the subject of medicine and of pharmacy. The principal difference is, that mace is warmer, more bitter, less unctuous, and sits easier on weak stomachs; in its yielding, by expression, a more fluid oil, and, in distillation with water, a more subtile volatile one.

The essential oil of mace is moderately pungent, very subtile and volatile, of a strong aromatic smell, like the mace itself; it is thin, limpid, of a pale yellow colour, with a portion of thicker and darker-coloured oil at the bottom. There are three oils of mace so called in the shops, though really expressed from the nutmeg.

For veterinary purposes this remedy is too expensive, and its effects not materially superior to the cheaper aromatics. We find it, however, in some of the compositions given to valuable horses.

**MACER**, Grecian macer. It is brought from Barbary: its thick yellow bark is astringent, as is also the dried root. Its fruit is called macre. M. Jussieu thinks that the macer of the ancients is the simarouba of the moderns.

**MACERATION**, in pharmacy, infusion either with or without heat, wherein the ingredients are intended to be almost wholly dissolved.

## M A D

**MACIES**, diseases in which the body, or particular parts of an animal, waste or wither.

**MADEFACTION**, is properly receiving so much moisture, that a body is quite soaked through by it; whence *madida* is said by some of any thing made tender by infusion or decoction.

**MADNESS**, or **FRENZY**, a term somewhat indefinitely applied to those accidents or diseases of brutes which produce an irregular action of the brain. In the human subject, madness usually denotes mental derangement; and as, in brutes, any morbid action or irritation on the brain is known by actions inconsistent with their usual habits or the law of self-preservation, this analogy has been assumed by the old writers on farriery. Gibson says, that "Madness or frenzy in a horse may be caused first of all by the excessive hurry of the blood in a legitimate simple fever: but that symptom will very readily abate, by those things that are proper to assuage the violence of that disease. Secondly, blood or matter collected upon the brain, or the membranes that involve it, may occasion a frenzy, whether that proceeds from wounds or bruises, or from a distraction or rupture of the vessels, when they have been over-full and distended beyond measure; or when there is any foreign substance grown within the skull: but then a frenzy arising from such causes will probably end in sudden death.

"But that sort of frenzy, which in a more peculiar manner deserves the name of madness, is what may happen without the concurrence of any other disease, and is most likely to proceed from excessive lust, occasioned by full feeding; either in a horse or mare, and when they are restrained from copulation. But this may be cured by bleeding, purging, with the concurrence of a low diet, &c."

Bartlet says, "A frenzy may follow upon the bite of any venomous creature. The first intention in the cure, after the bite, and before



the horse is mad, is to prevent the poison mixing with the blood. This possibly might be effected, if the part would admit of being instantly cut out with a knife, that cupping glasses might be applied, to empty the vessels, the wound being afterwards cauterized with a hot iron. The surrounding parts should afterwards be well bathed with fallad-oil, and the fore dressed once or twice a-day with mel ægyptiacum. It is necessary also, that it should be kept open for forty days at least, with a piece of sponge or orrice-root smeared over with the precipitate ointment, or that prepared with Spanish flies: these seem to be the chief external remedies to be depended on. Internally, for bites from vipers may be given cordial medicines, such as Venice treacle, and salt of hartshorn, an ounce of the former with a drachm of the latter, every night for a week; or where it can be afforded, a proportionate quantity of the famous *Tonquin remedy* of musk and cinabar, so much recommended in bites from infected animals."

To prevent the tragical effects of the bite from a mad dog, the latter writer directs many remedies, which it would be a waste of time, or something worse, to repeat, as the *inefficacy of every thing short of cutting out the bitten part* has been demonstrated again and again. Something has been said of madness, under the article DOG. Its treatment in the horse, may be that directed under STAGGERS.

MADOR, such a sweat as arises during faintness.

MAGISTRY, a term used by the old chemists to signify a very fine powder, made by solution and precipitation; as of bismuth, lead, &c. If to a solution of lead, fixed alkali be added, it seizes on the acid, taking the place of the lead, which falls down in a white powder, named *magistry* (i. e. oxide) of lead.

MAGMA (μαγμα), expresses the dregs or residuum after infusion or distillation has been performed.

MAGNA ARTERIA, the great artery; i. e. the aorta. See the articles BLOOD-VESSELS and HEART.

MAGNES ARSENICALIS, arsenical magnet; a composition of equal parts of antimony, sulphur, and arsenic, mixed and melted together, so as to become a glassy body.

MAGNESIA, an earth; rarely found pure, but for the most part a constituent of a great variety of fossil bodies. The sea is its chief source. In sea-salt it is united with the marine acid. After separating the salt for our tables from that of the sea, the magnesia is found in the residuum, from which by a farther process

is obtained what is called *Sal Catharticus Amarus*; and from this last-named salt, the magnesia is precipitated by addition of a fixed alkaline salt, both being first in a state of solution. We are not aware of any instance in which magnesia has been employed in veterinary prescription.

MAIZE, or MAYZ, a kind of *Indian wheat*, of which Boerhaave mentions three species, but they are only varieties from the same seed. In the West Indies this is an important article of human sustenance, and it also came greatly into use in Britain during the late years of scarcity. Count Rumford has shewn that, where properly cooked, it is, next to wheat, the most nutritious of any grain whatever. That it would prove so if given to cattle and pigs, there can be no room to doubt; but hitherto it has chiefly been used for fattening fowls, which it does very effectually.

MALA, the prominent part of the cheek. *Ossa malarum* are the cheek bones.

MALACIA (μαλακία); a depraved appetite, when such things are coveted as are not proper for food; but the etymology of the term seems doubtful, unless it be from *μαλασσω mollis, to soften*, because too lax a tone of the stomach is generally the occasion of indigestion, and unusual cravings. See APPETITE.

MALACOIDES, Mauritanian bastard-mallow. Tournefort gives this name to the malope of Linnæus.

MALAGMA (from *μαλασσω, to soften*). It is synonymous with cataplasma, from the frequency of making cataplasms to soften; but formerly, malagmas were made of many other ingredients.

MALAGRETA, or MALAGUETA, grains of paradise.

MALLENDERS, a cutaneous disease, usually confined to draught-horses. It is an inflammation of the skin below the hock, occasioning cracks which discharge a fetid matter. It is produced by an obstruction of the perspirable vessels, from want of cleanliness and friction.

The proper method of cure is to clip off the hair close to the skin, and wash the parts well with soft-soap and water: after which Mr. Denny advises the following powder to be rubbed on twice in the day:

Take of Vitriolated zinc,

Alum, of each in powder, half an ounce.

Mix them together.

Purgings, or a diuretic ball, may be necessary in obstinate cases.

Mr. White recommends the following ointment:

Take of Ointment of wax, two ounces;  
Olive oil, one ounce;  
Oil of turpentine,  
Camphor, of each a drachm;  
Acetated water of litharge, two  
drachms. Mix.

For the same purpose, Mr. Ryding recommends this:

Take of Strong quicksilver ointment, one  
ounce;  
Muriated quicksilver, in fine powder, ten grains. Mix.

This disease under the knee is named **SALENDERS**.

**MALATES**, salts formed by the union of the malic acid, or acid of apples, with the different alkaline, earthy, and metallic bases: there are twenty-four species enumerated in M. Fourcroy's Elements of Natural History and Chemistry.

**MALE**, the sexual distinction of an animal. The males of all animals are larger, and more powerful, than the females, and distinguished, especially among the brute creation, by many other peculiarities.

**MALIGNANT** (from *malignus*, evil); a term occasionally applied to many inveterate diseases, particularly to fevers of the typhous kind. See **CONTAGION**.

Very different are the definitions of malignity, or the different accounts of what constitutes it. The fevers termed malignant, upon examining their symptoms, seem to proceed from coagulation or from dissolution of the juices; volatile and attenuating medicines relieve in the first case, and mild acids, cooling emulsions, and agglutinants, are useful in the latter. And as these medicines act by manifest qualities, it may reasonably be inferred that malignant disorders arise from manifest causes; so that the notion of malignity from a secret something falls to the ground. The fevers that are malignant proceed from some particular contagious qualities of the air, not cognisable perhaps by the senses: corrupt and putrified matters diffused in the air may both cause and continue them.

The signs of malignity are, a slight coldness and shivering, a great loss of strength immediately ensuing, a small, quick, and contracted pulse, fainting, if an erect posture is long con-

tinued, drowsiness without any (at least refreshing) sleep, and if sleep comes on it is followed by a greater loss of strength and a delirium; there is no great complaint from pain, thirst, or other troublesome symptoms, and yet the patient is uneasy: at length the extremities are cold, the pulse intermits, and death soon approaches. These signs in the human subject are more or less discernible in other animals.

Those disorders in general may be called malignant which suddenly destroy the strength of the patient, and in which the living principle seems to be almost quenched at the first attack.

**MALLEUS** (quasi *molleus*, from *mollis*, to soften); a hammer or mallet. One of the bones in the ear is thus named. See **EAR**. This bone has a large round head, which contracts all the way from the neck, from whence the processus ravianus juts out like a fish bone, and on the outside a short process projects outward, and points against the membrana tympani; from thence the manubrium is continued down, and its extremity is fixed to the tympani membrana, and pulls it inward. When the malleus is in its proper situation, the neck and head of it are turned upwards, and inwards, and the manubrium downwards, the short process of the handle upwards and outwards near the upper part of the edge of the tympanum, and the processus ravianus forwards, reaching to the articular fissure in the os temporis, whence we may distinguish the malleus of one ear from that of the other. The handle of the malleus is tied to the membrana tympani by a fine membranous duplicature. This bone has three muscles, viz. the *laxator membrane tympani*, the *tensor membrane tympani*, and the *musculus externus auris* Du Vernii.

**MALLOW** (of *μαλαρχη*, from *μαλασσω*, to mollify). Boerhave enumerates fifteen species; but the common mallow being more frequently found, and possessed of the most useful qualities, is justly employed for them all. It is the *malva sylvestris*, or *malva caule erecto herbacea, foliis septem-lobatis acutis, pedunculis petiolisque pilosis*; Class. **MONODELPHIA**; Ord. **POLYANDRIA**; Linn. Gen. Plant. 841. It is sufficiently known not to need description. Its leaves and flowers are a little mucilaginous, have no remarkable smell, and are rather emollient and laxative. The leaves are used in decoctions for clysters, fomentations of the emollient kind, and in cataplasms. The roots have been used as a pectoral; they have a soft sweet taste, somewhat like liquorice, but have no remarkable smell. An extract from them, made with spirit of



wine, is very sweet. The leaves possess similar powers to the althæa; their use is superseded for internal purposes by those of the latter.

MAMMÆ, a term in human anatomy, applied to the breasts of women. In brutes the mamma, or reservoir of milk, takes different names; as in the cow it is called the UDDER, &c.

MAMMILLARY, or MAMMIFORM (from *mammæ*, the *breasts*), a term applied anatomically to such parts of an animal body as resemble the pap or nipple in shape.

MAMMILLARY PROCESS, the mastoid, or breast-like process. See Plate V. and the description of "*Bones of the Head*," under the article BONES.

MANAGEMENT OF A HORSE *on a* JOURNEY; a very necessary piece of information to every inexperienced traveller.

Mr. WHITE tells us that, previous to setting out on a journey, every precaution should be employed to bring the horse into as perfect a state of health as possible, as we thereby avoid much trouble and inconvenience. Should he be at all subject to *grease* or swelling of the legs, a dose of physic is to be recommended, taking care to preserve the heels clean, and to keep up a brisk circulation in the legs by frequent hand-rubbing. Should the feet be tender, it is necessary to enquire into the cause. If it arise from corns, let the directions be followed that are given under that head (see CORNS); if it proceed from flat and thin soles, apply tar to them, and let the horse stand upon a flat surface, without shoes, by which means they will be rendered thicker and more firm; and when he is ridden, let a concave shoe be made use of. When thrush or disease of the frog is the cause of the tenderness, cut away the diseased parts, apply tar, with a pledget of tow, and upon this place the artificial frog (see FROG)—the natural frog by the use of this will soon become firm and solid. If the thrush be occasioned by a contraction of the heels, which is frequently the case, it will then be necessary to rasp the quarters moderately; and should they appear to be too strong, wanting a proper degree of elasticity, keep the hoof constantly moist. Horses that travel during the winter, are very liable to have their heels inflamed and cracked, as it is termed, unless great attention is paid to them in the stable. In cases where the heels are already thus affected, they should be washed with moderately warm water as soon as the horse gets in, and afterwards carefully wiped dry with a soft cloth; if much inflamed,

an astringent lotion is to be applied; and if there be any ulcers or cracks, a suitable astringent ointment. See GREASE.

When a horse's wind appears to be imperfect, he should not be allowed to fill himself with hay or water, and must be prevented from eating his litter, which horses of this description are generally inclined to do, particularly when stinted in hay. In this case costiveness sometimes occurs, which always increases the complaint; to remedy this, let a Clyster (see CLYSTER) and a few bran mashies be given. Too high feeding is also very prejudicial in such complaints, as any thing which tends to create a plethora, and determine too much blood to the lungs, is sure to aggravate the disease. To a horse that purges or scours in travelling, and appears faint, sweating much with moderate exercise, give a cordial ball (see BALL), the efficacy of which is sometimes increased by being mixed with a pint of ale or strong beer. If the complaint does not give way to this treatment, let an astringent ball (see BALL) be given.

As soon as a horse comes into the stable, let his feet be well cleaned, and all dirt or gravel carefully removed. It is a very common practice with ostlers, even in winter, to tie the horse up in the yard, that he may undergo the ceremony of having his heels washed with cold water; this should never be permitted during the winter, as many bad consequences may arise from it.

During hot weather, when the roads are dry and dusty, allow a horse to drink a small quantity of water now and then, while on the road; this not only refreshes him considerably, but has the useful effect of cooling and moistening his hoofs, as he will generally be made to stand in the water while drinking, nor is there the least danger to be apprehended from it, unless he is ridden very hard immediately before or after. In winter he should never be taken into the water if it can be avoided.

Should the horse appear dull and *lose his appetite*, let him be bled moderately, and take a dose of nitre with a bran mash; this, with a little rest will soon recover him. It is a common practice, when this happens, to give cordials, which are very improper, and often do much injury to the animal, by bringing on a fever. Some horses are particularly subject to the flatulent colic, or gripes; this is often the case with CRIB-BITERS; on such occasions it is advisable to be always provided with a remedy, and the following ball is the most convenient form:

*Ball for the Flatulent Colic.*

Take of Castile soap, three drachms;  
 Venice turpentine, six drachms;  
 Caraway seeds, in powder, enough  
 to form the ball for one dose.

This will operate more speedily if dissolved in a pint of peppermint-water; or if that cannot be procured, a pint of warm beer may be substituted.

*A suppression of urine*, or great difficulty and pain in staling, sometimes occur in travelling; and in such cases a diuretic ball is commonly given, which though sometimes successful, has often done mischief. The most effectual way of relieving the horse, is by throwing up a clyster, and bleeding moderately: should there be no appearance of inflammation in the kidneys, a dose of nitre may also be given.

Mr. White condemns the common practice of loading a horse with clothes, and keeping him in a close warm stable, if he happens to take cold during a journey. This, he says, is certainly improper, since he is liable to be frequently exposed to wet and cold in travelling. It is indeed a well known fact, that animals are not hurt by being kept in any uniform temperature, whether it be hot or cold; but that their diseases more commonly arise from sudden changes, or frequent variation of temperature.

When a horse becomes *suddenly lame* upon travelling, let his feet be carefully examined. Should it be occasioned by a wound from a nail or flint, apply a little tincture of myrrh, after having removed all dirt or gravel from it. If the wound has been inflicted with a nail, let it be carefully opened to the bottom with a small drawing-knife, and means used to prevent dirt from getting to it.

MANDIBLE (from *mando*, to *chew*), a jaw. See MAXILLA.

MANDUCATION, signifies the action of the lower jaw, in chewing the food, and preparing it in the mouth before it is received into the stomach.

MANE, the hair that hangs down on a horse's neck, which should be long, thin, and fine, and if frizzled so much the better.

MANE-SHEET, in the manege, a sort of covering for the upper part of a horse's head, and all round his neck; which at one end has two holes for the ears to pass through, and then joins to the halter upon the fore part of the head, and likewise to the surcingle, or long girth upon the horse's back.

MANEGE, or MANAGE, an academy, riding-school, or other place for learning to

ride the great horse; as well as for breaking horses to the proper motions and actions. In every manege is a centre or place destined for vaulting round a pillar; a course or career for running the ring; and on the sides are pillars, between which are placed the horses intended for high airs.

The term *Manege* is also used for the exercise itself, or the art of riding, which teaches at once how to form the horseman and the horse. The former it teaches to secure a good seat upon the horse's back, a free, easy, disengaged posture, and the means of making his hand accord with his heels. The horse it instructs, as much as possible, how to carry well, to take his aids, to regard the corrections that can fix him to a walk, a trot, and a gallop; and then to manege, or work upon all sorts of airs, that, thus broken and managed, he may be of use in the dangers of war, in the necessities of life, and sometimes in the pomp and splendor of festivals and public shows. See HORSE, HORSEMANSHIP, EQUESTRIAN, &c.

A horse is said to manege, when he works upon volts and airs, which supposes him broken and bred; and a horse is said to be thoroughly managed, when he is well broken, trained, and confirmed in any particular air.

Mr. John Lawrence very properly condemns the old "continental manege," as unnecessarily complicated and even cruel. Gentle usage and mild methods are practised at present, and found to answer.

The *high MANEGE* is the high or raised airs, which are proper for leaping horses.

The *MANEGE for a troop horse* is a gallop of unequal swiftness, but so that the horse changes hands readily.

"For the exercise of the manege," says a writer on this subject, "make choice of a middle-sized horse, lively, full of spirits and action, that is short trussed, well coupled, having good feet and legs, and shoulders very easy and supple. It ought also to be observed, that horses which have thick, stiff, and short joints, that are no ways flexible or pliant, are unfit for the manege: for pliant joints, if they are not too long, are one of the chief qualities requisite in a fine and delicate horse of manege. As for the age most proper to begin to work a horse designed for the manege, he should not be too young, because in that case the frequent stops and goings back will spoil him, by straining his back, and distressing his hams. See the article EQUESTRIAN, &c.

MANGANESE. Bergman considers it as a genus of metal; others speak of it as a species



of iron-ore, which is in part decomposed; others again consider it as a particular kind of earth. Its texture is striated; or with concentric fibres, or indeterminate. It is of a dark grey, black, red, or white colour.

MANGE, a cutaneous disease, incident to many domestic quadrupeds, and attended with an eruption and loss of hair. Mr. RYDING's account of this disease is as follows:

The causes of mange, he says, are sudden changes of temperature, hot stables, bad diet, joined to want of cleanliness. The perspirable matter being never properly removed by friction, and frequently being mixed with dust, &c. completely plugs up the external vessels, whereby they become obstructed, and a diseased action takes place. It may also be caused by infectious matter coming in contact with the skin; as when a sound horse rubs himself against the stall in which a mangy horse has been kept.

The principal symptoms of mange are, the horse growing very thin, without any apparent cause, attended with a staring of his coat. This is soon followed by eruptions, which discharge a thick yellowish matter, forming a kind of scurf, which peels off, and is succeeded by fresh eruptions, and the hair falls off. This, though partial at first, soon spreads all over the body, is attended with an itching, and causing the horse to rub against every thing he comes near.

With due attention to cleanliness, the following medicines will very soon remove this disease:

Take of Prepared hog's lard, one pound;  
Sulphur, half a pound;  
White hellebore, in fine powder,  
three ounces;  
Mix, and add  
Olive oil sufficient to make a soft ointment.

A moderate quantity of this ointment may be rubbed well, with the hand, all over the affected parts, or where there is the least appearance of any eruption; and this should be repeated after an interval of three days. Two or three applications of this ointment, Mr. Ryding says, are generally sufficient to complete the cure.

The following medicine, however, may be given with advantage in this disease. It will be found excellent for removing cutaneous obstructions, improving the appetite, and promoting condition. (See CONDITION.)

Take of Antimony in fine powder, eight ounces;

Grains of paradise in fine powder, three ounces.

Mix, and add

Venice turpentine, sufficient to form the mass of a proper consistence, and divide it into twelve balls. One of them may be given every other day.

Mr. Denny says the cure ought to commence with taking away four or five pints of blood, *if the animal's strength will allow it*; (by the way, a very material proviso; as promiscuous bleeding is too commonly practised in cutaneous diseases): and we are advised to give the following ball in the evening:

Take of Nitre, in powder,  
Resin, in powder,  
Castile soap, of each half an ounce;  
Camphor, in powder, one drachm;  
Honey, enough to make a ball.

He recommends particular attention to be paid to diet, exercise, and good grooming. The food, he says, ought to be of the best quality, and given in liberal quantities. The bowels should be kept open with mashes, in which an ounce of nitre is dissolved. A small rowel may likewise be placed in the chest. The affected part should be well washed with a strong solution of soft-soap, and afterwards rubbed, morning and evening, with the following ointment, for a week:

Take of Flowers of Sulphur, four ounces;  
Hog's lard, three ounces;  
Quicksilver ointment, two ounces.  
Mix them.

This ointment may be continued every other day, until the disease gives way, or is entirely removed. Two or three doses of mild physic, are afterwards recommended, and then the following ball, every night, for a month:

Take of Ethiops mineral,  
Crude antimony, in powder,  
Cream of tartar, of each half an ounce;  
Honey, enough to make a ball.

When the disease is removed, which a perseverance in the above method of cure, Mr. Denny asserts, will effect, the horse should be turned out to grass, if at a proper season of the year; but a salt marsh should be preferred. See MARSH.

Mr. John Lawrence is disposed to consider as the principal causes of this disease, neglect and insufficient diet. He says, "if you keep a horse very poorly, he will be mangy; but if you line his inside well, however you may neglect him externally, he will not generally be mangy." He excepts, however, the case of the horse's being employed by a lime-carter. "A few years ago," says Mr. L., "on the recommendation of certain stable economists, and in the teeth of common sense and my own experience, I undertook the feeding of labouring cart-horses upon carrots and oat-straw, and other vegetable trash, for which I was properly rewarded, in a short time, by the trouble of curing them all of the mange. This disease, or morbid result of poverty and filth, suffered to arrive at an extreme degree of inveteracy, degenerates into a marasmus or consumption, absolutely incurable.

"The mange, if a mere cuticular affection, induced by an external cause, or caught by contact of a diseased horse (which last may happen from rubbing against such an one, or wearing infected clothes, or standing in an infected stall), is speedily cured by external applications, with the aid of a dose or two of physic; but when the disease originates in the mass of humours being vitiated, the cure will require a greater length of time, and a larger share of medical assistance."

In a slight case, the treatment advised is strong tobacco infusion with one third part of stale urine, to wash the affected places. But, as an efficacious *unguent*,

Take of Quicksilver ointment, half a pound;  
Brimstone finely powdered, four ounces;  
Black soap, two ounces;  
Crude sal armoniac, an ounce and half;  
Oil of bays or turpentine, enough to make an ointment.

Or,

Take of Tar,  
Gunpowder finely powdered,  
Black soap,  
Oil of turpentine, of each about equal quantities.  
Mix into an ointment.

In cases of long standing, where the ulcerations are extremely foul and resist all moderate applications, the following ointment, Mr. Lawrence says, may be ventured on:

Take of Burnt alum,  
Borax, in fine powder, of each two ounces;  
White vitriol,  
Verdigrease, powdered, of each four ounces.

Put them into a pot over the fire with two pounds of honey, or of lard and honey equal parts. Stir them till they are well incorporated, and when cold, add of Aqua fortis, two ounces.

The first of these ointments, however, Mr. Lawrence conceives to be equal to almost every case, being used at night; especially if the sores be washed twice a-day with the following lotion:

Take of Muriated quicksilver (*sublimata*), in powder, half an ounce;  
Dissolve it in a pint and half of boiling water.

Or perhaps the following may deserve the preference:

Take of Muriated quicksilver,  
Muriated ammonia (*crude sal armoniac*), of each from two to three drachms;  
Boiling water, three half pints.  
Mix.

This kind of treatment, modified at the discretion of the practitioner, will succeed in cases of mange affecting other animals.

MANGER, a little raised bench or trough, under the rack in the stable, made for receiving the grain or corn that a horse eats.

MANIPULUS, a handful.

MANNA, the produce of the *Fraxinus Calabrienfis*; but, according to some, of the *Fraxinus Ornus*. It is a sweet juice obtained from ash trees, in the southern parts of Europe, particularly in Calabria and Sicily; exuding from the leaves, branches, or trunk of the tree, and either naturally concreted or excised and purified by art. It is a mild laxative; too mild perhaps for veterinary uses.

MANNA GRASS. The *festuca fluitans* is so called in Germany, because its seed has a sweet and agreeable taste, particularly before it comes to its full growth. *Manna grass* is also a name of the *Panicum Sanguinale*.

MANNA GROUT, the seeds of the manna grass.

MARASMUS (*μαρασμος*, from *μαραίνω*, *maraisco*, to grow lean); a term for that reason used



to denote a consumption, where the body wastes much of its substance.

**MARE**, the female of the horse kind. See the article **HORSE**. No mares in the world are better suited for breeding from than the English, provided they are properly chosen for the sort of horse intended to be bred. The mare, whatever sort of horse is intended to be raised from her, should be perfectly sound, and as free from all defects as the stallion. The highest spirited mares are the best; and, in general, if there be any natural defect in the mare, it should be remedied in the stallion; and if any in the stallion, it should be remedied in the mare, as much as possible, in order to the having good colts. See the articles **BREEDING**, **DEFECTS**, &c.

The particular directions regarding the kinds of horses to be bred are these: If for the manege, the mare should have her head well set on, and her breasts broad; her legs not too long, her eyes bright and sparkling; and her body large enough, that the foal may have room. She should be of a good and gentle disposition, and her motions easy and graceful: In a word, the more good qualities the mare has, the better, in general, her colts will prove. See the article **COLT**.

If the owner would breed for racing, or for hunting, the mares must be chosen lighter, with short backs and long sides; their legs must be longer, and the breast not so broad; and such should always be chosen as have good blood in their veins. If the speed and wind of any particular mare have been tried, and found good, there is the more certainty of a good colt from her; but she should be in full health and vigour at the time, and not above seven years old, or eight at the utmost. The younger the breeders are, the better, in general, the colts will be. See **BREEDING**.

**MARK**. In stable language a horse *marks*, when he shews his age by a black spot, like the bud or eye of a bean, which appears, at about five and a half, in the cavity of the corner-teeth, and is gone when he is eight years old: then he ceases to mark, and they say, *he has rasped*. See the articles, **AGE**, **TEETH**, and **RASE**.

Gibson says, "with regard to the marks of horses, arising from their colour, some have reckoned them to be *lucky or unlucky*, as they happened to be this or that way marked. Others have even been so curious as to lay much stress upon them, and to denote all the *good or ill qualities* of a horse from his marks: but

however this may be, certain it is, that a horse always looks the more beautiful for being well marked; and a horse without marks always has a deadness in his aspect.

"A star is the most common of all marks; and where that is wanting, it is often supplied with an artificial one. When the white descends pretty broad toward the nose, it is called a blaze; when it descends into a smaller line, it is called a snip; and when most of a horse's face is white, he is then said to be bald. All these marks are beautiful when they are not in extremes, for a very large star is not reckoned so beautiful as one that is of a moderate size; neither is that baldness that spreads over a horse's whole face and cheeks any way becoming, as it gives him the look of an ox; and such horses are often plain-headed. When the white of a horse's face is divided in the middle, or any other part, or when a blaze or snip runs awry to one side, it looks somewhat disagreeable, though perhaps it may be no diminution to a horse's goodness. Some black horses have their stars or blazes fringed round with a mixture of black hairs, which looks very well, only such horses are apt soon to grow grey-faced, and look old; as are some of the browns. But when the bays and sorrels have their stars or blazes fringed, it is generally with their own colour, or lighter, and seldom has that effect.

"As to the white marks upon the feet and legs of horses, they usually correspond with the marks upon their faces. Bald horses have generally a good deal of white about their legs, and often all four are white, which in them is not unbecoming. Horses with large blazes have often all their four feet white also; but a horse that has no marks on his face, or but a small one, never looks well with white legs, especially when the white rises above the fetlock: on the other hand, a bald horse, or any that has a blaze, without any of the feet white, is but ill marked; and therefore a horse always looks best when there is this correspondence and agreement in the marks: a horse that has his near-feet both before and behind white, and his off-feet without any white, is but indifferently marked. The same where the marks are only on the off-feet, without any white on the near-feet.

"Some dislike horses for being traversed, or cross-marked, viz. the near-foot before, and the off-foot behind, white; or on the contrary, when the off-foot before, and the near-foot behind, are only white. Those are usually judged to be the best marked that have only the near-

foot behind white, or both feet behind white; or where the near foot before, and both the hind feet, are white; especially when at the same time a horse has a large radiated star, or small blaze, on his face. When the white about the feet is indented with black, or any other colour, towards the coronet, these feet are thought to be generally good; and when the coronet is spotted like ermine, the mark is so much the better: but where a horse's pasterns, hoofs, and all his four legs, are white, especially when the white rises above the knees or hocks, it looks ugly; and a horse thus marked has too much of the pye-bald, consequently seldom fit for a gentleman's use.

The feather is another sort of distinction, which we often observe, especially on stone-horses; and such geldings as have short hair, and are finely coated. Some are of a round figure, and some long and narrow, in the true penniform shape, or like an ear of barley. The round are often on the forehead, sometimes on the breast and shoulders, and look like embroidery. Those on the neck lie immediately under the mane, and run down towards the withers. When the feather happens on both sides the neck, the mark is reckoned exceedingly good and beautiful. Sometimes feathers run down the fore-arms, and sometimes on the thigh, and towards the dock; and they may be observed on several other parts of a horse: but, wherever they happen to be, they are almost always reckoned signs of goodness; and some of them are exceedingly beautiful. See the article FEATHER.

MARROW, MEDULLA, *quasi in medio ossis*; because it is in the middle of the bone: called also *axungia de mumia*. In anatomy it has various significations. The white substance of the brain is called *medulla*, or the *medullary* part, to distinguish it from the cortical. The continuation of the brain, &c. in the spine is called *medulla spinalis*; but, properly speaking, *medulla* is the marrow in the bones.

If marrow is viewed through a microscope, it seems a mass of small globules joined together like the roe of a herring. The distinction which some authors make betwixt a *medulla* and the *succus medullaris* is useless, the marrow in human bones, and those of most quadrupeds, being always fluid. The *membrana medullæ* not only lines the internal surface of the bones, but also divides the marrow into vesicles, or membranous bags, which are furnished with very fine minute vessels. The marrow is secreted into these little membranes by the arteries, and the superfluous part is occasionally carried into

the mass of blood by bibulous absorbent veins. The use of the marrow is to keep the bones firm and flexible, and from becoming brittle, which would soon be the case without it, as is often seen in persons of scorbutic habits, where it is separated in too small a quantity, and is, beside, bad in itself. The *membrana medullæ* has a nerve which enters with the artery, and makes it sensible.

It has been supposed, that the marrow is never sensible but in a diseased state; and that the dropsy has the power of removing it. No marrow is found in the fœtus, but a kind of gelatinous fluid in its place. Animal oil never transudes in the living body from the bones, nor does marrow prevent their brittleness, as it is merely adventitious. The bones of birds contain no marrow, but air. Marrow of animals is prescribed in some compositions, but it has no superior efficacy to other common oleaginous substances. The season usually preferred for collecting it is about autumn, for at other times it is bloody and brittle.

A continuation of the medullary substance of the cerebrum and cerebellum is called MEDULLA OBLONGATA. Its continuation from the latter is named MEDULLA SPINALIS. See those articles.

MARRUBIUM, HOREHOUND. See HOREHOUND.

MARS, denoted by this character, ♂, among the chemists, signifies iron, because imagined under the influence of that planet. See the articles IRON, MARTIAL, and CHALYBEATES.

MARSH, or SALT MARSH, a kind of pasture found to be particularly favourable to the recovery of sick and lame horses, under certain circumstances. The experienced Gibson says the salt marshes along the river Thames are as good pasture for horses as any about London; and there many horses run all the year round. Though the air arising from the marshes is very injurious to human constitutions, and subjects them to annual returns of the ague, and some other maladies; yet it has no such effect upon brute creatures that feed on them, which may perhaps be owing to the quality of the salts, with which that grass is more or less impregnated. The marsh soil is for the most part a composition of a very fine light mold, mixed with sand, covered all over with a fine trefoil, which sows itself and grows extremely thick in some places, as we see it on some parts of our finest commons. If the rains fall never so heavy, the ground being open drinks it up immediately, so that the cattle always lie dry upon it, even in winter when most other places are potchy, which is one of the



greatest benefits of all others to horses at grafs. They purge more there, both by dung and urine, than on any other pasture, and afterwards take on a firmer flesh; so that those who send their horses there only to cleanse them, and after purging remove them to other pastures, unless it be for some particular convenience, Gibson says, are greatly mistaken; for he has known horses that have run there summer and winter, with as few accidents as happen to horses anywhere else. Four-and-twenty hours' constant rain in the grafs season will often bring up grafs in the marshes, unless the weather be extremely cold. And horses often grow fat on the best marshes, when they are eaten so bare, or burnt up in dry weather, that scarcely any grafs is to be seen on them. In winter some never house them, but let them run abroad and take their chance in the open fields, where there are neither trees nor hedges to cover them, and yet they seldom suffer any thing from the extremity of the weather; nor, unless the ground be covered deep with snow, do they allow them any dry forage. Yet these for the most part appear in good case, even in the months of December and January, when they have nothing to feed on but the roots.

All the water they have to drink is for the most part brackish, which at first is not very agreeable to horses that have not been used to it, but afterwards they come to relish it as well as any other. The greatest danger on the marsh grounds is from the deep ditches made to take off the spring tides, some of which have their bottoms full of a kind of loam ingendered by the weed which comes into them in great plenty at high water. And if a horse that is a stranger to these grounds happen, in leaping, or any other way, to step into one of them, he may run the hazard of being lost unless he be discovered in time. Sometimes horses have been washed away with the spring tides by going too near the dykes, but these accidents seldom happen, not only because the marsh-men are always upon the watch at such times; but most horses have sagacity enough to avoid the danger.

It is certain that there have happened some instances of horses that have soon died there. These, however, are but few; yet no wonder, considering many are carried there, as consumptive people are sent to the Hot-Wells, when all expectations from the common means are given up. Nevertheless great numbers of horses recover in the marshes beyond all expectation, in chronical distempers, especially where the viscera happen to be sound, or but little diseased. "Nay," says Gibson, "I may venture to say,

when a distempered horse dies suddenly at the marshes, it is a good riddance to the owner." Those who have not the convenience of the marshes, may turn their horses out upon some other good pasture in a moderately warm soil, where the grafs is fine, and has never been forced with dung or other unkindly manure, and where there is good water and proper shelter. See GRASS.

MARTIAL (from *Mars*, in a chemical sense, *iron*). Compounds in which iron is the principal ingredient, are called *martial* preparations. Thus we have the *ETHIOPS MARTIALIS*, which is prepared thus:

*Martial Ethiops.*

Take of Rust of iron, any quantity;  
Oil of olives, a sufficient quantity to  
make it into a paste;  
Let this be distilled in a retort, by a strong  
fire, to dryness: keep the residuum, reduced to a fine powder, in a close vessel.

This process is much less tedious than that given in a former pharmacopœia, and less troublesome also; besides, it is supposed to give nearly the same result. It has been recommended on the supposition that the iron is here obtained in a very subtle state, but not in general supposed to have any advantage superior to the common chalybeates.

Another preparation of this metal is the

*Martial Flowers.*

Take of Iron filings, one pound;  
Sal ammoniac, two pounds;  
Mix, and sublime—rub together what remains at the bottom of the vessel with the sublimed matter, and again sublime.

The Edinburgh mode of preparing them is somewhat different, *viz*:

Take of Vitriolated iron, burnt, washed, and again exsiccated,  
Sal ammoniac, of each equal weights;  
Let them be well mixed and sublimed.

The results of these processes, though different in their mode of preparation, are ultimately the same.

The success of this process depends principally upon the fire's being hastily raised; that the sal ammoniac may not sublime before the heat is become strong enough to enable it to carry up a sufficient quantity of the iron. Hence glass vessels are not so proper as earthen or iron

ones; for when the former are made use of, the fire cannot be raised quick enough, without endangering the breaking of them. The most convenient vessel is an iron pot: to which may be luted an inverted earthen jar, having a small hole in its bottom, to suffer the elastic vapours, which arise during the operation, to escape. It is of advantage to thoroughly mix the ingredients together, moisten them with a little water, and then gently dry them; and to repeat the pulverisation, humectation, and exsiccation, two or three times, or oftener. If this method be followed, the sal ammoniac may be increased to three times the quantity of the iron, or further; and a single sublimation will often be sufficient to raise flowers of a very deep orange colour.

This preparation is highly useful in distempers proceeding from a laxity and weakness of the solids. For veterinary purposes, however, it is probably on a footing with martial vitriol (*Ferrum vitriolatum*). The new name given by the London College to the martial flowers, is that of *Ferrum ammoniacale*, *Ammoniacal Iron*.

MARTINGAL, in the manege, a thong of leather fastened to one end of the girths under the belly of a horse, and at the other end to the mufsole, to keep him from rearing.

MARUM (from the Hebrew term *mar*, *bitter*). Also called *sampsuchus*, *clinopodium mastichina Gallorum*, *thymbra Hispanica*. *Jaca Indica*, MASTICH THYME, or COMMON MARUM. It is the *thymus mastichina*, Linn. It is a low shrubby plant, with small oblong leaves, pointed at both ends, set in pairs without pedicles; at the tops of the branches stand woolly heads, containing small white labiated flowers, whose upper lip is erect and cloven, the lower divided into three segments: each flower is followed by four seeds, inclosed in the cup. It grows spontaneously on dry gravelly grounds in Spain, and in such-like soils it bears the ordinary winters in England. Its virtues are similar to those of the Syrian marum, but less powerful.

MARUM SYRIACUM, vel CRETICUM, also called *Majorana Syriaca vel Cretica*, *marum Coortusi*, *chamædrys incana maritima* MARUM GERMANDER, or SYRIAN HERB MASTICH. It is the *teucrium marum*, *foliis integerrimis ovatis acutis petiolatis, subtus tomentosis, flor. racemosis secundis*; Class DIDYNAMIA; Ord. GYMNOSPERMIA; Linn. Gen. Plant. 706. It is a low shrubby plant, with small oval leaves, pointed at each end, and set in pairs without pedicles, of a dilute green colour above, and hoary beneath; in their bottoms appear solitary, purple, labiated flowers, each of which is followed by four roundish

seeds, inclosed in the cup. It is said to be a native of Syria. In our climate it does not well bear the winters without shelter.

The leaves are bitter, pungent, and aromatic to the taste: they yield a quick smell, which excites sneezing; and agree very much with the *canella alba* in their virtues.

This plant loses but little in drying; it gives out its active matter partially to water, but completely to spirit: the watery infusions smell strong, but taste weak of the marum; the spirituous taste strong, but smell weak. Distilled with water, it yields an highly pungent, volatile, essential oil, similar to that of scurvy-grass, but stronger, and of a less perishable pungency; the remaining decoction is bitterish. Rectified spirit carries off only a part of the smell and pungency of the marum. This plant is supposed to possess very active powers; hence becoming an important remedy in many diseases requiring the use of stimulants; for, administered in human diseases, it is said to be tonic, resolvent, and diuretic, and useful in cachexy, and nervous debility. It is used also as a sternutatory. The old veterinary writers who have included this remedy in their prescriptions have added so many other herbs at the same time, that its properties can hardly be said to have been at all ascertained. This indeed is the case with a multitude of other vegetables which they were fond of employing.

MASH, a kind of diet pudding sometimes given to a horse. It is made of half a peck of ground malt, put into a pail, into which as much scalding water is poured as will wet it very well. When that is done, stir it about till by tasting you find it as sweet as honey; and when it has stood till it is luke-warm, it is to be given to the horse. This is mostly used after a purge, to make it work the better; or after hard labour; or in the time of sickness. Mashcs are made with bran in the same manner. Mr. TAPLIN recommends two thirds of the former, to one of the latter.

MASS, a term applied generally to the composition out of which pills are to be formed. It is likewise, in a figurative sense, applied to some collections of fluids, and particularly that of the blood; for which it is frequently used.

MASSETER (from *μασσωμαι*, to chew or eat), the MASSETER MUSCLE. In the human subject it rises on each side, from the cheek-bone and the interior part of the zygomatic process of the os temporis; and is inserted into the whole length of the lower jaw, particularly the angle. These muscles are also called *laterales musculi*, *manducatores*, *manferius musculus*.



For a view of this muscle in the horse, see *p p q*, Pl. II. and the description of muscles, &c. "*In the Head*," under ANATOMY of the HORSE.

**MASSICOT.** Lead exposed to the fire enters into fusion long before it is red-hot; when melted, its surface acquires a pellicle, which is re-produced as fast as it is taken off. This pellicle is called the *calx of lead*. This calx exposed to a red heat, is more and more calcined, acquires at first a pale yellow colour, and at length becomes of a deep aurora yellow. In this state it is called *massicot*.

**MASTICATION** (from *maslico*, to chew); also *manducation*; the action of CHEWING. The more the aliment is chewed, the more agreeable it is to the stomach, and the more effectually digested. The food being ground betwixt the teeth, and intermixed with saliva and air, does, by the action of the latter, undergo a further dissolution; the warmth of the parts exciting the elasticity of the air to expand and burst asunder the confined particles of the food, betwixt which it is included. In the act of mastication, the oily, aqueous, and saline parts of the food, are intermixed, the one with the other; so that the smell and taste of different ingredients are lost in one, which, by the solution of the saline parts with saliva, renders the food flavourable; but such particles as are more volatile and penetrating, being directly absorbed by the bibulous vessels of the tongue and cheeks, are said to enter at once into the blood-vessels, so as to cause an immediate recruit. There is nothing very improbable in this last effect, though the immediate relief derived from eating rather seems to be produced by the distension of the stomach and the stimulus of the substances eaten. In ruminating animals, mastication is performed twice. (See the article CUD.) In old horses, much of the grain that is given them passes through the intestines unaltered, and consequently without nourishing them in the least. This arises from their greediness in eating, or from the wearing of the grinding teeth. To compel them to masticate effectually, chaff is intermixed with their corn; but perhaps the end would be better answered by roughly grinding or bruising it, so that it could not pass without being digested and affording nourishment.

**MASTICATORIES**, are such medicines as are intended for chewing, in order to evacuate more than ordinary by the salivary glands. See the article CHEWING BALL.

**MASTIGADOUR**, or **SLAVERING-BIT**, a snaffle of iron, smooth, and of a piece, guarded

with paternosters, and composed of three halves of great rings, made into demi-ovals of unequal bigness, the lesser being inclosed within the greatest, which ought to be about half a foot high. A mastigadour is mounted with a headstall and two reins. The horse, in champing upon the mastigadour, keeps his mouth fresh and moist, by the froth and foam that he draws from the salivary glands. To put a horse to the mastigadour, is to set his croup to the manger, and his head between two pillars in the stable. Horses accustomed to hang out their tongues, cannot do it when the mastigadour is on, for that keeps the tongue so much in subjection, that they cannot put it out. This instrument of torture is little, if at all, used at present.

**MASTOIDÆUS**, the mastoid muscle. Dr. Hunter calls it *Sterno-mastoidæus*, and says it rises by two distinct portions from the sternum and that part of the clavicle which is articulated to the sternum, and is inserted into the mastoid process. For this muscle in the horse, see Plate II. and the explanation, under ANATOMY of the HORSE.

**MATCH**, OF HUNTING, OR HEATS for a plate; an object not strictly within the views of veterinary medicine, yet important in equestrian economy, and abundantly interesting to the sportsman. In order to ride to the best advantage, either a hunting-match, or three heats and a course for a plate, we are told by writers on this subject (whom we implicitly follow), that the first thing requisite is a rider, who ought to be a faithful one, in whom you can confide. "He should have a good close seat, his knees being held firm to his saddle-skirts, his toes being turned inwards, and his spurs outwards from the horse's sides, his left hand governing the horse's mouth, and his right commanding the whip; taking care, during the whole time of the trial, to sit firm in the saddle, without waving, or standing up in the stirrups, which actions do very much incommode a horse, notwithstanding the conceited opinion of some jockies, that it is a becoming seat.

"In spurring his horse, he should not strike him hard with the calves of his legs, as if he would beat the wind out of his body, but just turn his toes outwards, and bring his spurs quick to his sides; and such a sharp stroke will be of more service towards the quickening of the horse, and sooner draw blood. Let him be sure never to spur him but when there is occasion, and avoid spurring him between his shoulders and girths (which is the tenderest part

of a horse) till the last extremity. As to the whipping the horse, it ought to be over the shoulder on the near side, except in hard running, and when *at all* strike the horse in the flank with a strong jerk, the skin being tender there, and most sensible of the lash.

"He must observe, when he whips and spurs his horse, and is certain that he is at his utmost speed, if then he clap his ears to his pole, or whisk his tail, he may be sure that he bears him hard; and then he ought to help him as much as he can, by fawing his snaffle to and fro in his mouth, and by that means forcing him to open his mouth, which will give him wind.

"If in the time of riding there is any high wind stirring, if it be in his face, he should let the adversary lead, he holding hard behind him till he sees an opportunity of giving a loose; yet he must take care to keep so close to him that his adversary's horse may break the wind from his, and that he, by stooping low in his seat, may shelter himself under him, which will assist the strength of his horse. But on the contrary if the wind be at his back, he must ride exactly behind him, that his own horse may alone enjoy the benefit of the wind, by being as it were blown forward, and by breaking it from his adversary as much as possible.

"In the next place, observe what ground your horse prefers most to run on, and bear the horse (as much as your adversary will give you leave) on level carpet ground, because the horse will naturally be desirous to spend himself more freely thereon; but on deep earths give him more liberty, because he will naturally favour himself upon it.

"If you are to run up hill, do not forget by any means to favour your horse, and bear him, for fear of running him out of wind; but if it be down hill (if your horse's feet and shoulders will endure it, and you dare venture your neck) always give him a loose.

"This may be observed as a general rule, that if you find your horse to have the heels of the other, that then you be careful to preserve his speed till the last train-scent, if you are not to run a strait course; but if so, then till the end of the course, and so to husband it then also, that you may be able to make a push for it at the last post.

"In the next place you are to acquaint yourself, as well as you can, with the nature and temper of your adversary's horse; and if he be fiery, then to run just behind, or just cheek by jowl, and with your whip make as much noise as you can, that you may force him on faster than his

rider would have him, and by that means spend him the sooner; or else keep just before him, on such a slow gallop, that he may either overreach, or by treading on your horse's heels (if he will not take the lead) endanger falling over.

"Take notice also on what ground your opponent's horse runs the worst, and be sure to give a loose on that earth, that he may be forced to follow. In like manner, in your riding observe the several helps and corrections of the hand, the whip, and the spur, and when and how often he makes use of them; and when you perceive that his horse begins to be blown, by any of the former symptoms, as clapping down his ears, whisking his tail, holding out his nose like a pig, &c. you may then take it for granted, that he is at the height of what he can do; and therefore in this case take notice how your own rides, and if he run cheerfully and strongly, without spurring, then be sure to keep your adversary to the same speed, without giving him ease, and by so doing, you will quickly bring him to give in, or else distance him. Observe at the end of every train-scent what condition the other horse is in, and how he holds out in his labour, of which you may be able to make a judgment by his looks, the working of his flanks, and the slackness of his girths. For if he look dull, it is a sign that his spirits fail him; if his flanks beat much, it is a token that his wind begins to fail him; and consequently his strength will do so too.

If his wind fail him, then his body will grow thin, and appear tucked up, which will make his girths, to the eye, seem to be slack; and therefore you may take this for a rule, that a horse's wanting girthing after the first scent, provided he were girt close at his first starting, is a good sign, and if you find it so, you need not much despair of winning.

After the end of every train-scent, and also after every heat for a plate, you must have dry straw and dry cloths, both linen and woollen, which have been steeped in urine and salt-petre a day or two, and then dried in the sun, and also one or two of each must be brought into the field wet; and after the train has been ended, two or three persons must help you, and after the groom has with a knife of heat (as it is called by the duke of Newcastle), which is a piece of an old sword blade, scraped off all the sweat from the horse's neck, body, &c. then they must rub him well down dry, all over, first with the dry straw, and then with dry cloths, whilst others are busy about his legs; and as soon as they have rubbed them dry, then let



them chafe him with the wet cloths, and never give over till you are called by the judges to start again. This will render his joints pliant and nimble, and prevent any inflammation which might arise from any old strain."

The next thing regarded by the writer of these profound instructions is the judges' or triers' office. These are persons appointed to see that all things are ordered according to the articles agreed on. These, which are read before the horses start, are as follow:

1. That each trier, on whose side the train is to be led, according to the articles, give directions for its leading, according to the advice of the rider, or his knowledge of the nature and disposition of that horse on whose side he is chosen.

2. That each trier be so advantageously mounted, as to ride up behind the horses (but not upon them), all day, and to observe that the contrary horse ride his true ground, and observe the articles in every particular, or else not to permit him to proceed.

3. That after each train-scent be ended, each trier look to that horse against which he is chosen, and observe that he be no ways relieved but with rubbing, except liberty on both sides be given to the contrary.

4. As soon as the time allowed for rubbing be expired, which is generally half an hour, they shall command them to mount, and if either rider refuse, it may be lawful for the other to start without him; and having beat him the distance agreed on, the wager is to be adjudged on his side.

5. The triers shall keep off all other horses from crossing the riders; only they themselves may be allowed to instruct the riders by word of mouth how to ride, whether slow or fast, according to the advantages he perceives may be gained by his directions.

6. If there be any weight agreed on, they shall see that both horses bring their true weight to the starting-place, and carry it to the end of the train, upon the penalty of losing the wager.

The same rules are to be observed, especially this last, by those gentlemen who are chosen to be judges at a race for a plate, only they usually stay in a stand, that they may the better see which horse wins the heat.

"Now," continues the writer, "in running for a *plate*, there are not so many observations to be made, nor more directions required, than what have been already given, only this, if you know your horse to be rough at bottom, and that he will stick at mark, to ride him each heat

according to the best of his performance, and avoid as much as possible either riding at any particular horse, or staying for any, but to ride each heat throughout with the best speed you can.

"But if you have a very fiery horse to manage, or one that is hard-mouthed and difficult to be held, then start him behind the rest of the horses, with all the coolness and gentleness imaginable; and when you find he begins to ride at some command, then put up to the other horses, and if you find they ride at their ease, and are hard held, then endeavour to draw them on faster; but if you find their wind begin to rake hot, and that they want a fob, if your horse be in wind, and you have a loose in your hand, keep them up to their speed till you come within three quarters of a mile of the end of the heat, and then give a loose and push for it, and leave to fortune and the goodness of your horse the event of your success.

"Lastly, when either your hunting-match or the trial for the plate is ended, as soon as you have rubbed your horse dry, clothe him up and ride him home, and the first thing, give him the following drink to comfort him:

"Beat the yolks of three eggs, and put them into a pint and a half of milk, then warm it and put to it a little saffron, and three spoonfuls of fallad-oil, and give it him in a horn.

"Having done this, dress him slightly over with the curry-comb, brush, and woollen-cloth, and then bathe the place where the saddle stood with warm sack, to prevent warbles; and wash the spurring-places with urine and salt: then litter the stable very well, clothing him up as quickly as possible, and let him stand for two hours. Then feed him with rye-bread, after that with a good mash, and give him his belly-full of hay, and what corn and bread he will eat. Then having bathed his legs well, leave him corn in his locker, and so let him rest till the next morning, at which time order him as in his days of rest."

*The ordering a horse for a MATCH, or PLATE*, is a most important part of equestrian discipline. The reasoning on this subject would disgust an enlightened Veterinarian, no less than the system of *jockeyship* we have just unfolded, though for a different reason. We shall therefore confine ourselves to a few particulars, which will shew the customary method of training horses designed for the turf. "When you have either matched your horse, or design to put him in for a plate," says the writer, "you should consider

that you ought to reserve a month at least, to draw his body perfectly clean, and to refine his wind to that degree of perfection that is capable of being attained by art.

“In the first place, take an exact view of the state of his body, both outwardly and inwardly, as whether he be low or high in flesh, or whether he be dull and heavy when abroad; and if this has been caused by too hard riding, give him half an ounce of diapente in a pint of good old Malaga sack, which will both cleanse his body and revive his spirits. Then for the first week feed him continually with bread, oats, and split beans, giving him sometimes the one and sometimes the other, according to what he likes best, always leaving him some in his locker for him to eat at leisure when you are absent; and when you return at your hours of feeding, take away what is left, and give him fresh, till you have made him wanton and playful. To this purpose, take notice, that though you ride him every day morning and evening, on airing, and every other day on hunting, yet you are not to sweat him, or put him to any violent labour, the design of his week’s ordering being to keep him in wind and breath, and to prevent purfiveness.

“You must now make a finer bread than before, as follows: Take two pecks of beans, and a peck of wheat, and let them be ground together, but not too fine, to prevent too much bran being in the bread; and dress one peck of the meal through a fine range, and knead it up with new ale-yeast, and the whites of a dozen new-laid eggs, and bake this in a loaf by itself; but dress the rest of the meal through a boulder, and knead it only with ale and yeast, and use it in all other points as the former: the peck loaf is to be given the horse when you set him, and the other at ordinary times. This bread very much increases the strength, courage, and wind, of the horse.

“If your horse be brisk and lively, when you lead him out of the stable he will leap and play about you, then you must not only omit giving him the sack and diapente, but any other dose whatsoever; for it will rather prey upon the strength of his body, and by that means weaken him.

“If your horse be engaged in a hunting-match, you must sweat him twice this week, not by hunting him after the hare, but by train-scents, since the former, on this occasion, may prove deceitful; for though the hounds should be very swift, yet the scent being cold, the dogs will very often be at fault, and by that means the horse will have many sobs; so that when

he comes to run train-scents in earnest, he will expect ease for his wind. Therefore lead your train-scents with a dead cat, over such grounds as you are likely to run on, and best agrees with the humour of your horse, and also chuse the fleetest hounds you can get, and they will keep your horse up to the height of his speed, As to the number of train-scents which you should ride at a time, that is to be ordered according to the match you are to run, or rather according to the strength of your horse, and ability for performing his heats; for if you labour him beyond his strength, it will take him off his speed, weaken his limbs, and daunt his spirit. If you give him too little exercise, it will render him liable to be purfive, and full of humours, and incline him to a habit of laziness, so that when he comes to be put to labour beyond his usual rate, he will grow restive and settle, like a jade. But so far may be said by way of direction, that if you are to run eight train-scents, and the strait course, more or less, you are not to put him to such severe labour above twice in the whole month’s keeping. And if it be in the first fortnight, it will be the better, for then he will have a whole fortnight to recover his strength in again; and as for his labour in his last fortnight, let it be proportionate to his strength and wind, as sometimes half his task, and then three quarters of it.

“Only observe, that the last trial you make in the first fortnight, be a train-scent more than your match, for by that means you will find what he is able to do. And as to the proportion of his exercise twice a-week, that is sufficient to keep him in breath, and yet will not diminish or injure his vigour. But if your hunting-match be to run fewer trains, then you may put him to his whole task the oftener, according as you find him in condition; only observe, that you are not to strain him for ten days at least, before he ride his match, that he may be led into the field in perfect strength and vigour.

“If you design your horse for a plate, let him take his heats according to this direction, only let him be on the place, that he may be acquainted with the ground; and as for the hounds, you may omit them, as not being tied to their speed, but that of your adversary’s horse. But as to the number of heats, let them be according to what the articles exact; only observe, that, as to the sharpness of them, they must be regulated according to the strength, and the goodness of his wind. And when you heat him, provide some horses upon the course to run against him; this will quicken his spirits



and encourage him, when he finds he can command them at his pleasure. And here too you must observe the same rule, not to give the horse a *bloody* heat for ten days, or a fortnight, before the plate is to be run for; and let the last heat you give him before the day of trial be in all his clothes, and just skelp it over, which will make him run the next time the more vigorously, when he shall be stript naked, and feel the cold air pierce him.

"During this month, and on his resting-days, and after his sweats on heating-days (if there be any occasion for sweating him), you must observe the same rules which have been given for the first week of the third fortnight's keeping, only you must omit all scourings but rye-bread and mashes, since your horse being in so perfect a state of body, has no need of any, except you shall judge there is occasion, and that the horse proves thirsty, about eight or nine o'clock at night, you may give him the following julep, to cool him and quench his thirst:

Take of Barley-water, two quarts;  
Syrup of violets, three ounces;  
Syrup of lemons, two ounces;

Having mixed these together, give them to the horse to drink, and if he refuse, place it so that he may not throw it down, and let it stand by him all night.

"During the last fortnight, you must give him dried oats that have been hulled by beating, and having washed half a strike of oats in the whites of a dozen or twenty eggs, stir them together, and let them lie all night to soak, and spread them abroad in the sun the next morning, till they are as dry as they were at first, and so give them to your horse; and when these are spent, prepare another quantity after the same manner. This food is light of digestion, and very good for his wind.

"You must hull his beans also, but not give him them so often, if he will eat his oats without them; and as for his bread this time, make that of three parts wheat, to one of beans, and order it as before directed. But if you find your horse inclinable to be costive, then give him oats washed in two or three whites of eggs and ale beaten together, to cool his body and keep it moist. Give him not any mash for the last week, only the barley-water before directed, but let him have his fill of hay, till a day before he is to ride the match, when you must give it him more sparingly, that he may have time to digest what he has eaten, and then, and not before, you may muzzle him with

a cavesson; and be sure that day, and not till the morning he is let out, to feed him as much as possible, for such a day's labour will require something to maintain his strength. Therefore in the morning before you are to lead out, give him a toast or two of white bread steeped in sack, which will invigorate him; and when you have done, lead him out into the field.

"But if you are to run for a plate, which commonly is not till three o'clock in the afternoon, then by all means have him out early in the morning to air, that he may empty his body, and when he is come in from airing, feed him with toasts in sack; considering, that as too much fulness will endanger his wind, so too long fasting will cause faintness.

"When he has eaten what you have thought fit to give him, put on his cavesson, and having afterwards well chafed his legs with piece-grease and brandy warmed together, or train-oil (which likewise ought to be used daily at noon, for a week before the match, or longer if you see cause), shake up his litter, and shut the stable up close, and take care that there is no noise made near him, and let him rest till the hour come that he is to go out into the field."

MATERIA MEDICA, in an extensive sense, the whole of the medical remedies in use; in a more limited, the pharmaceutical remedies called DRUGS. By this term, in fact, is not only understood the materials afforded by nature, but also those which are prepared by art; and with these last every veterinary practitioner ought to be as well acquainted, as with what relates to diet, &c. Writers on the materia medica have endeavoured to arrange the various articles of which it is composed into different classes; but a slight investigation will convince us of the inaccuracy of the plans that have been presented us, even by the best writers, as Cartheuser, Newmann, Lewis, Gelditsch, Linnæus, Alston, and Vogel. Dr. Cullen has supplied us with a materia medica, the most judiciously arranged. On this subject he says, "That as the study of the materia medica is truly the study of the medicinal virtues; so the plan that arranges the several substances, according to their agreeing in some general virtues, will be the best adapted to acquiring the knowledge of these, and will most readily inform the practitioner what different means he can employ for his general purpose. It will also inform him how far the several similar substances may differ in their degree of power, and how far from the different qualities assigned to each he may be directed, or limited in his choice. As it seems proper that every practi-

tioner ought as far as possible to practise upon general indications, so it is evident that his study of the materia medica is especially to know the several means that can answer these. Such a plan must be most proper for giving instruction; and, if while medicines are arranged, according as they answer general indications, the particulars be likewise thrown together, as far as possible, according to their sensible qualities and botanical affinities, this plan will have the advantage of any other that has been proposed for presenting together the subjects that ought to be considered at one and the same time, and give the best means of recollecting every thing that relates to them." Hence the whole of the substances are arranged under different heads, making the materia medica consist of such things as supply nourishment, which are solid food and liquids, and such things as are taken along with them, viz. condiments. Medicines which act upon the simple solids, viz. astringents, tonics, emollients, and erodents. Upon the living solids, viz. stimulants, sedatives, narcotics, refrigerants, and antispasmodics. Those which act upon the fluids, viz. such as alter their fluidity. Attenuants and inspissants, their mixture; correctors of acrimony in general, viz. demulcents; in particular, viz. antacids, ant-alkalines, and antiseptics. And lastly, evacuants, viz. errhines, sialogogues, expectorants, emetics, cathartics, diuretics, and diaphoretics.

MATER ( $\mu\eta\tau\eta\rho$ ), a mother. In anatomy, two membranes take this name, viz. the dura and the pia mater. They were so called by the Arabians, because they thought them the origin of all the other membranes of the body. In the old chemistry, quicksilver was known by the name of *Mater Metallorum*.

MATRASS, the name of a chemical glass vessel, made for digestion, or distillation, being somewhat bellied, and rising gradually taper into a conical figure.

MATRICARIA, FEVERFEW, a genus in Linnaeus's botany. He enumerates six species.

MATRIX ( $\mu\eta\tau\eta\rho$ ), the womb of a female. Some chemical philosophers thence figuratively apply it to any thing that gives nourishment and increase to any bodies; thus the earth is a matrix to the seed sown in it.

MATTER, or BODY, an impenetrable, divisible, and passive substance, extended in length, breadth, and thickness. This, when considered in general, remains the same in all various motions, configurations, and changes of natural bodies, being capable of putting on all manner of forms, and moving according to all manner

of directions and degrees of velocity. The quantity of matter in any body, is its measure as to its absolute weight. The discharge from an abscess is also called matter. See Pus.

MATIERING OF THE PENIS; a discharge from the sheath of a horse's yard, sometimes proceeding from his taking full liberty with mares before he is able to cover them; or in exerting himself too eagerly in covering. When the skin is fretted off, there will issue a considerable discharge of foetid matter, which may be of bad consequence if care be not taken; though at first it may be cured by bathing the part with lead water, weak alum water, or brandy. In using the spirits he is to be taken out of the stable: for when these are applied to so sensible a part as the yard, the smarting will be apt to make him lame himself, unless he has room: but that does not last above a minute.

If the excoriation or sore be internal, which can only be distinguished by the matter proceeding from the urinary passage itself:—and not from the pain in pissing, as some farriers suppose; for the least sore upwards, as it is more or less accompanied with inflammation, will exhibit the same signs as the urine passes through the inflamed part:—in that case Gibson recommends the following to be injected three or four times a-day:

Take of Plantain or rose water, a pint;  
Venice turpentine, one ounce;  
The yolk of an egg;  
Honey, one ounce;

Mix these together in a mortar: then pour the water on them by degrees, until they are incorporated. Add, if necessary, two ounces of spirit of wine or brandy, wherein half a scruple of camphire has been dissolved. Put the whole mixture into a phial, shaking it as often as you have occasion to use it.

MATURATION, is most properly said of the ripening of fruit; but by some physical writers is applied to the suppuration of excrementitious or extravasated juices into matter, and differs from concoction or digestion, which is the raising to a greater perfection the alimentary and natural juices in their proper canals. Medicines thus procuring maturation, are generally called *Maturants*, or RIPENERS: see the latter.

MAXILLA (from  $\mu\alpha\sigma\sigma\alpha\omega$ , to chew), the cheek, or the jaw.

MAXILLA INFERIOR, the lower jaw, is made of one bone, the fibres of which at the chin do not ossify in young animals till they are about



two years old. It is composed of two tables, which are pretty hard and smooth; but betwixt these laminæ it is porous, and full of little cavities. Its figure resembles the letter U. At each extremity it has two processes; the uppermost is called *Corona*; it is thin and broad at its beginning, but ends in a sharp point, which, passing under the processus zygomaticus, has the tendon of the crotaphite muscle inserted into it. The other, which is shorter and lower, has a round head, lined with a cartilage, which is articulated into the sinus of the os petrosum; but, betwixt the cartilage which lines the sinus, and that which covers the head of this process, there is a third, which adheres to the ligamentum annulare, which surrounds this articulation. The motion of the jaw sideways, absolutely necessary in chewing, is much facilitated by the loose intervening cartilage. The lower edge of this jaw is called its *basis*, and each end of it called the *angle* of the lower jaw. This jaw has four holes; two on its inside near its processes, and two on its outside near its middle. By the internal holes enter a branch of the fifth pair of nerves, an artery from the carotids, and a vein from the jugulars, whose branches are spread in the roots of the teeth. By the external holes these vessels pass, and are distributed upon the chin. It has also several sockets, into which the teeth are set.

**MAXILLA SUPERIOR**, the upper jaw. The bones of this jaw are two, common to it and the skull, called *Os Mala*, which see under **BONES**; and eleven proper, that is, five on each side and one in the middle. They are joined to the bones of the skull by the three common sutures, and joined to one another by a fine but true suture. The first of the proper bones is the os malæ, or zygoma, which is of a triangular figure. Its upper side makes the lower and external part of the circumference of the orbit, where it joins the os sphenoides. Its internal side joins the os maxillare. Its external has a long process, which, joining that of the ossa temporum, forms the processus zygomaticus. It joins the os frontis at the little angle of the eye. It is concave within, and projects a little forwards, making the highest part of the cheek. The second is the os maximum, or maxillare; so called, because it is the principal bone of this part, and hath set in it all the teeth of the upper jaw. It is of a very irregular figure. On its inside it joins the os malæ. Its upper sides make the lower and internal part or circumference of the orbit. At its great canthus it joins the os unguis and frontis. The lower side of the os nasi is joined to

it. Under the upper lip it joins with its fellow on the other side; and both, joined together make the fore and greatest part of the roof of the mouth. It is very thin, and between its two laminæ it has a large cavity, which opens by a small hole into the nostrils. In its lower end it has sixteen sinuses or sockets, in which the teeth are set. It has a small hole called *Orbiter externus*, in that part of it which makes part of the orbit, through which the nerves of the fifth pair, which come from the teeth, pass. Behind the dentes incisivi, where it joins with its fellow, it has another, which comes from the nostrils. The third is the os unguis. It has a little thin bone which lies in the great angle of the orbit, and has a hole in which the lachrymal sac lies. There does not appear any good reason for accounting this a bone of the upper jaw, because it lies entirely in the great angle of the orbit; and there is more reason to call it a lamina of the os spongiosum, than the os planum. The fourth is the os nasi: this is a thin but solid bone, which makes the upper part of the nose. Its upper part is joined to the os frontis by the sutura transversalis. One of its sides joins its fellow, where they are supported by the septum narium. Its other side joins the os maxillare. Upon its lower end the cartilages of the nostrils are fastened. Externally it is smooth, but internally rough. The fifth bone of the upper jaw is the os palati. It is a small bone almost square, and it makes the posterior part of the roof of the mouth. It is joined to that part of the os maxillare, which makes the fore-part of the palate; it is also joined to its fellow, and to the processus pterygoideus. It has a small hole, through which a branch of the fifth pair of nerves goes to the membrane of the palate. The last is called the *Vomer*, and is situated in the middle of the lower part of the nose. It has a cleft in its upper side, in which it receives the lower edge of the septum nasi. In its farther end it receives a small apophysis of the os sphenoides, and its under-side joins the os palati.

The analogy, with regard to this bone, obtains in many quadrupeds. See the plates of the Skeleton of the Horse, and the descriptions under the articles **BONES** and **SKELETON**.

**MAXILLARY GLANDS.** See **MOUTH**.

**MAXILLARY ARTERIES.** The external maxillary artery, is a branch from the external carotid artery. It runs to the basis of the lower jaw, just close to the upper attachment of the masseter: it gives a branch to the maxillary glands; it passes over the lower jaw, it goes up upon the buccinator, it gives off a branch to

the lower lip, which anastomoses with the other on the other side, and is continued to the upper lip, where it anastomoses likewise; there they are called *Labial Arteries*; it then gives off branches to the nose, goes to the inner canthus of the eye, is lost on the forehead, and communicates with the temporal artery.

The internal maxillary is a branch from the external carotid; it rises therefrom just at the origin of the temporal, and is distributed to both the jaws; it is very much convoluted, and gives branches to all the deep-seated parts: one branch of it runs through the lower jaw, which is called the *Inferior Maxillary Artery*, whilst the main trunk of it runs up to the bottom of the orbit, to the foramen orbitale lacerum inferius, winds about the antrum, and sinks into the nose behind the upper maxillary bone, and before the pterygoid process of the os sphenoides, to be spent upon the inside of the nose.

The inferior maxillary artery is a branch of the internal maxillary artery.

**MAXILLARY NERVES.** The *lower* maxillary nerve is the third branch of the fifth pair of nerves which pass from the head. It passes through the foramen ovale of the os sphenoides, where it gives off several branches to the muscles of the lower jaw, then throws a remarkable branch through the lower jaw, to supply the teeth, which comes out at the anterior part of the channel, and branches upon the lip; from this a capital branch is detached to the tongue, called the *Lingual*, which runs between the two pterygoid muscles, and passes to the top of the tongue, going along with the duct of the maxillary gland. It is this which gives off the chorda tympani. See Plate VI. and the description under the article EXTERIOR.

The *upper* maxillary nerve is the second branch of the fifth pair of nerves, which pass from the head. It passes through the foramen rotundum of the os sphenoides, where it throws off a branch on the palate, but the trunk passes on in the sulcus of the upper maxillary bone, and goes to the upper jaw, and to the antrum there, when, having given off these branches, it comes out below the orbit, and is diffused upon the face, particularly upon the nose, the upper lip, and cheek.

**MEASURES.** The measures employed in pharmacy are the common wine measures.

A gallon	} contains	{ eight pints ( <i>libræ</i> ).	
The pint			{ sixteen ounces.
The ounce			{ eight drachms.

By a spoonful is understood, in the London dispensatory, the measure of half an ounce;

in the Edinburgh, half an ounce weight in syrups, and three drams in distilled waters.

Though the pint is called by Latin writers *libra* or pound, there is not any known liquor of which a pint measure answers to that weight. A pint of the highest rectified spirit of wine exceeds a pound by above half an ounce; a pint of water exceeds it by upwards of three ounces; and a pint of vitriolic acid, weighs more than two pounds and a quarter.

In the last edition of the Edinburgh Pharmacopœia, measures are entirely rejected; and the troy weight is used in directing the quantity either of solid or fluid substances. All possible care is however taken, that the proportions of the simples and strength of the compounds should neither be increased nor diminished by this alteration.

A table of the weights of certain measures of different fluids, on many occasions useful, both for assisting the operator in regulating their proportions in certain cases, and for shewing the comparative gravities of the fluids themselves, is given in Lewis's Dispensatory.

**MECON** (*μηκων*); the Greek name for a poppy.

**MECONIUM** (*μηκωνιον*, from *μηκων*, *papaver*, a poppy); properly the condensed juice of poppies, or opium: but it is used also for the excrements of a fœtus or young animal, which adhere to the intestines after birth, merely because these have been imagined to have some resemblance to opium in colour.

**MEDIAN.** A vein of the cubit is thus called from its situation in the middle between the cephalic and basilic. There is also the median or cervical nerve.

**MEDIASTINUM** (*quasi in medio stare*, to stand in the middle). This, in man, as well as most quadrupeds, is a double membrane, formed by the continuation of the pleura, which comes from the sternum, and goes straight down through the middle of the thorax to the vertebræ, dividing the cavity in two. It contains in its doublings, the heart in its pericardium, the vena cava, the œsophagus, and the stomachic nerves. The membranes of the mediastinum are only continuations of the pleura, and they have a little fat. The mediastinum receives branches of veins and arteries from the mamillary and diaphragmatic, and one proper, called *Mediaстина*; its nerves come from the stomachic; it has also some lymphatics, which open into the thoracic duct. The mediastinum divides the thorax into two parts, to the end that one lobe of the lungs may officiate, if the other be hindered by a wound on the other side. Some-



times there is matter contained betwixt its membranes immediately under the sternum, which may require the trepanning of this place.

MEDIASTINUM CEREBRI, is the same as SEPTUM TRANSVERSUM, which see.

MEDICA, medic fodder. The French call it *Saint Foin*. Pliny says it is called *Medica*, because it came from Media into Greece, when Darius Hytaspis invaded it.

MEDICAGO, medic, a genus in Linnæus's botany. He enumerates ten species and fourteen varieties.

MEDICAGO ARABICA, heart-trefoil, or clover, a species of Medicago.

MEDICAMENTA, MEDICAMENTS, the articles employed in pharmacy. *Medicamentaria* denotes the art of making and preparing medicines.

MEDICAMENTA EXTEMPORANEA, or MAGISTRALIA (from *medico*, to heal). These are such kinds of medicinal compositions as are planned by the practitioner, immediately, *pro re nata*, according to the circumstances of the patient; though a variety of these are to be found in some Pharmacopœias, under the title of *Extemporaneous Medicines*, and all practices of physic chiefly consist of them.

MEDICASTER, a false pretender to the knowledge of medicine; the same as quack.

MEDICINE, or VETERINARY MEDICINE, the art of curing the diseases of brute animals that are necessary or convenient to man.

"Amongst the improvements of these latter times," says Mr. JOHN LAWRENCE, who writes with peculiar good sense and emphasis on this subject, "the extension of a regularly cultivated system of veterinary practice, and the attempts to rescue the superior classes of domestic animals from the torturing hand of presumptuous ignorance, are not the least considerable, either in the view of humanity or use. It is true, that during the various ages which have passed since the days of Columella, the number of writers treating on the veterinary science, according to the best medical light which their times afforded, has been considerable; but their works had never any very extensive circulation, competent practitioners were wanted to put their precepts in force, and diseased animals were either totally neglected, or confided to the unmeaning and capricious efforts of the illiterate vulgar. Entirely to wipe away this opprobrium of humanity and common sense, would infinitely redound to the credit of the present times; and it is consoling to be able to announce, that attempts are daily making towards that beneficent end, by considerate and philanthropic

characters, in various parts of our own and a neighbouring country.

"Ancient prescription and a false pride amongst the faculty, compose the two-fold cause which has hitherto generally deprived our domestic animals of the benefits and comforts of regular medical and surgical assistance. Cattle have always been *doctored* in every country, either by their attendants, or by men pretty nearly upon a level with those in point of education, who, on the strength of having learned to perform the most simple and common operations, and from the want of abler proficient, have undertaken the arduous task of prescribing medicines. We will not wonder that, in former times, such professors were held duly qualified; since men impartially committed their own persons to the hands of ignorant barber-surgeons, and since so many other absurdities of equal magnitude subsisted, which like spectres and ghosts have vanished at the approach of modern light; but it may well be thought surprising, that in this discerning age, when a liberal education is universally acknowledged to be absolutely necessary to the acquisition of medical science, an illiterate farrier should be entrusted in the cure of diseases. *Precisely the same studies, physiological, anatomical, and medical, are requisite for the Veterinarian, as for the human practitioner.* The animal economy in its manifold relations is generally and fundamentally the same in man and beast, and governed by the same laws of nature and natural mechanics; the same materia medica is (to a certain extent) applicable to both; but the greatest skill is requisite to form a judgment on the diseases of brutes, from their inability to describe their feelings, and the consequent uncertainty of their pathology. Can there be a greater burlesque, than the supposition of a man's ability to prescribe physic for a horse, merely because he understands how to groom or shoe him? or might not we also, with equal reason, employ our own shoemakers, in taking measure of our health? The plea of experience is futile; from the utter inability, *prima facie*, of illiterate and uninformed men to investigate the principles of science, and their total want of opportunity to acquire, even by rote, a rational system of practice. The whole stock of medical knowledge of these practitioners, usually consists in a certain number of receipts derived from their masters or fathers, and with which they continually ring the changes in all cases, right or wrong, hit or miss; and so fiercely are they bigotted to their particular nostrums, that they are totally incapable of all advice or improvement; the

common and unavoidable fate of confirmed ignorance, since it is the highest point of knowledge to know that we still need information. They sometimes cure by luck, seldom by wit, but often kill by regularly adapted process. How often has the miserable patient's shoulder been pegged, and blown, and bored, by way of punishment, for the folly of getting himself strained in the back sinews of the leg, or coffin-joint? How many pleuritic horses have been killed outright, by ardent and spicy drenches, which might probably have cured the cholera, had they been afflicted with it? How many have been rendered incurably lame, from the patten-shoe being affixed to the wrong foot; the doctor unfortunately not being aware of the difference between constriction and relaxation, as the patient in Gil Blas died because his physician did not understand Greek? Let not the reader suppose these to be mere flourishes, applied to the generality of farriers: they are literal truths; and by the tenor of them, he may judge of the majority of that faculty throughout Europe. Into such hands do we commit distempered animals which have it not in their power to reproach us with their accumulated sufferings; mankind from prejudice, indolence, and want of feeling, *neglecting those creatures which they can purchase with their money.*"

"But," continues the author, "the pride of medical gentlemen will not suffer them to incur the fancied degradation of becoming horse and cow doctors; hence the major part of the public are necessitated to commit the care of their beasts to unlearned and empirical hands; nevertheless, were there a cordial and general encouragement, I am convinced there would be no want of able veterinary practitioners. What possible shame can or ought to be annexed to the practice of veterinary medicine; since it is an act of humanity, of important public service, since it has engaged the attention and the labours of some of the most eminent men of both ancient and modern times, and since the uncontrollable nature of things has placed the just administration of it out of the power of all but the enlightened? It must then be pronounced an honourable office, and altogether fit and becoming the *homo generosus*, or gentleman."

"Veterinary writers indeed have not been wanting; and this has been more particularly the case during the present century, and subsequent to the great modern improvements in medicine. Various able practitioners have also occasionally arisen among us, and in a neighbouring country; but the number of such has

been so small, that the benefits derived from their efforts have been of course confined to a very narrow sphere. It was many years ago discovered in France, that the best remedy for this defect, and the only adequate method for the general propagation of veterinary knowledge, and the rearing of a sufficient number of persons properly qualified in that line, would be to erect *public seminaries expressly dedicated to the purpose.* We of this country came (somewhat late indeed) into the same salutary measure; and a Veterinary College (see VETERINARY COLLEGE), or Hospital for Cattle, has been established at London, another near Birmingham, and I believe one or two more are under consideration, in different parts of the kingdom. The propriety of these steps, and the benefits derived therefrom, are matter of proof, in the obvious extension of veterinary knowledge, and the increase of practitioners within these few years. Public institutions, provided they are not unduly favoured with exclusive privileges, or armed with coercive and restrictive powers, are ever most efficacious and contributory to the advancement of science; a prominent instance of the truth of which we are at this moment witnessing, in the establishment of a board of agriculture, which in its infancy has already conferred benefits of the most important nature on the country, and in a much larger proportion than could possibly have been experienced from mere private exertions, or those of societies however favourably constituted, during a great length of time. To make use of a homely proverb, that which is every body's business is usually held to be no man's business, and therefore demands the fostering hand of the community: the scattered rays of knowledge are by joint and public means best collected into a common focus, whence they are with more ease and expedition diffused and circulated throughout the whole body of the commonwealth."

The progress of veterinary medicine, grounded as it necessarily must be on analogy, will be rapid or slow, according to the diligence of those enlightened practitioners which the College has sent forth, in making experiments to ascertain precisely the limits to which that analogy extends, and in what cases it is defective. See the articles, ANALOGY, DRUGS, &c.

MEDICINES; drugs, or compounds of certain ingredients, calculated to cure the diseases of animals. These are administered with a twofold view, namely: as *preventives*, where from existing circumstances the attacks of disease are to be apprehended; or as *curatives*, to restore



health after it has been lost. The exhibition of medicines with the former intention, namely, as preservatives or preventives, is a favourite custom with many to whom the management of horses is entrusted. That it is often unnecessarily, and, of course, mischievously done, will appear from the following observations on the subject by Mr. Clark.

If, says he, a man or a horse be in a state of health, what more is required, or how can they be made better? health is the most proper state of an animal body, and it is not in the power of medicine either to make it better, or to preserve it in the same state. A good medicine given seasonably, when there is an appearance of some latent disorder, or some derangement in the body, which would, in a short time, occasion its breaking out, may prevent it from taking place, by carrying it off. The same medicine given in a state of health, will produce an alteration in the system, by increasing or diminishing some of the natural secretions, or disturbing the animal functions; or, even allowing that it did not produce any of these changes, still it leaves the body just as liable to the impressions of disease as before. Besides, the custom of giving medicines too frequently is a bad one; they become habitual to the constitution, which renders them totally inefficacious when necessary, or, at least, their effects are greatly impaired. This is but too visible in many of the human species, who indulge themselves in the pernicious custom of drinking drams; hence, what in certain cases would prove a cordial, loses its effect upon them. And there are but too many examples of people who have contracted the habit of taking medicines under the titles of stomachics, &c. who have injured their health, and impaired their constitutions, though otherwise naturally strong.

The medicines commonly administered to horses, by way of *preventives*, are generally composed of aromatics, spices, &c., under the denomination of cordials, &c.; these are said to heat and invigorate the stomach, and thereby promote digestion. But, if a horse is otherwise in health, this desirable end is brought about in a much more natural way, by proportioning the food to the labour which the horse undergoes.

But more powerful medicines are frequently given to horses in health, under the title of *alteratives*, which prove of great benefit, when properly prescribed, in disease.

*Alteratives* are certain medicines, which are said to change the humours or juices of an animal body from a morbid or diseased state to

that of health; they have no immediate sensible effect, but gain gradually on the constitution, and are followed (if the viscera are found) with the most salutary effects, by promoting the natural secretions. But, in this case, a *disease* is implied, and, of course, such things may be necessary and proper. Thus antimony in its different preparations, mercury, sulphur, aloes, and salts, are alterative remedies. The former of these, especially the coarser kinds, are generally given too frequently, in too great quantities, and in too gross a state, which sometimes brings on great sickness, or violent purging; and, in some constitutions, in place of promoting the cuticular secretions, &c. they occasion a great heat and dryness of the skin, which is frequently succeeded with a number of hard lumps, or with blotches, on different parts of the body. Mr. Clark asserts that sulphur not only opens the body, but readily makes its way through the pores of the skin, and therefore should be used with caution, as horses are very apt to catch cold upon the too liberal use of it. Aloes given in small quantities, by way of an alterative, and too frequently repeated, weakens the stomach and bowels, so as to bring on a lax, or what is called a *washy* habit of body; it ought therefore only to be given to robust horses, of a full habit of body, and newly taken from late grass, or that have been accustomed to foul feeding, as grains, boiled chaff, &c.

The neutral salts, especially nitre, or common salt, are the best and safest alteratives that can be given to horses. They seem to agree with the constitution, and have this advantage, that they require no clothing or confinement, nor is the free use of them attended with disadvantage. Still, it would be absurd to prescribe even these without some apparent cause. Nitre is of great service in all inflammatory complaints; it not only allays the great heat of the blood, but promotes the natural secretions, particularly that of urine, and is one of the best and the safest medicines that can be given to horses on such occasions. Common salt given to horses which do not appear to thrive when there are no symptoms of an inflammatory disease, has a very good effect; it promotes digestion, and the natural secretions; it makes them take on flesh, and coat well.

Mr. Clark by no means would prohibit the moderate use of antimony as an alterative. But the coarser kind is ill prepared, and frequently as injudiciously prescribed. If coarse and black like gunpowder, it should always be rejected. The best is ponderous, and composed of long

shining needles; and this, if *lewisated* into the finest powder, may be given with safety.

Medicines exhibited in diseases also require the exercise of caution and discernment, as will appear from some instances which Mr. Clark gives of their abuse. In speaking of the treatment of sick horses, he says—

“It is amazing what different kinds of compositions are forced down horses’ throats on these occasions. I shall mention one instance: A gentleman in London, was greatly prejudiced in favour of *vinegar*, as a cure for many diseases: he was fond of it himself, and used it frequently with his food. His favourite horse was taken ill in very warm weather; and, as he thought vinegar was a very *cooling thing*, he ordered an English pint of it to be given to his horse at once. It was no sooner swallowed, than the horse lay down, stretched himself out, and died.” Unluckily, the nature of the horse’s complaint was not known, as the owner would not suffer him to be opened. “As I never knew or heard of any other instance,” says Mr. Clark, “where such a quantity of vinegar was given at once to a horse, I cannot take upon me to say what effects it may produce; but, if I may be allowed to conjecture, I would presume, from similar cases, that the coats of the stomach had been inflamed, a disorder which frequently takes place in horses, especially when there are worms in it; and, in such cases, any thing that is too cooling, or sharp, in its nature, when poured into the stomach, may produce the same effects, and hasten the horse’s death. I shall mention one instance. I was once desired by a farrier in this neighbourhood, who was indisposed, to visit a horse that had been a patient of his for some days, and report the situation he was in. His servant was giving the horse a drink when I entered the stable; which, I was afterwards informed, was composed of an infusion of lintseed, in which was dissolved one ounce of nitre, with some honey to sweeten it, and, into the last hornful was poured, from a small vial, about half an ounce, or more, of spirits of hartshorn. The horse seemed very uneasy after the drink; he was soon seized with a violent trembling and shaking; a profuse sweat broke out all over his body, and ran down his sides, as if water had been poured on him; at the same time, his legs and ears were quite cold; he lay down, seemingly in great agony; he was soon after convulsed all over, and died in about half an hour from the time the drink was swallowed.”

Mr. Clark, on inspecting the stomach, found the coats of it greatly inflamed. A mortification

had taken place on one side, where it appeared of a darker colour, and there was a small hole in it, through which a probe passed into the cavity of the stomach. The coats of it were thickened, and of a dark colour, like that of the liver; at the same time, it was considerably distended, and full of food. On turning it inside out, an incredible number of bots were found sticking all round the sides and lower part, as close to one another as bees in a honey-comb; and so firmly were the heads of these vermin hooked into the coats of the stomach, that, in endeavouring to pull some of them off when alive, they broke in two, and their heads remained behind sticking in the substance of the stomach.

The author supposes there had been a previous tendency to a mortification, which would soon have occasioned the horse’s death; but he thinks there is every reason to believe that the drench hastened it. He makes one remark, which is worth notice, relative to the above case: The horse was very fat, and had been only three weeks out of the dealer’s hands, where he had been fed with a great deal of what is called *foul feeding*, which is grain of different kinds boiled together with the chaff, and which, it is thought, produces worms of different kinds in the stomach of horses: Another circumstance is, that the horse died in the winter season, when bots are very uncommon. See the article BOTS.

When horses are sick, it is too common to mix medicines, such as nitre, in their water. The disagreeable taste of these prevents many horses from drinking; and hence, they suffer considerably from the want of water to dilute the fluids in general, and to promote the necessary secretions of urine, &c. On the contrary, every means should be tried to tempt horses, if possible, to drink freely in such cases; and sometimes it may be forced on them, by pouring it down their throats with a horn: for as the diseases to which horses are mostly liable are of the inflammatory kind; and the thinner parts of their fluids are carried off by the strong perspiration they are exposed to, from the nature of their exercises; whenever they are seized with acute diseases, their fluids are then more disposed to be thick, viscid, and inflammatory; therefore, as water is the principal diluter of the fluids in general, in such cases a considerable quantity of it at this time becomes highly necessary, and, in some cases, may be the best medicine that can be given them. Mr. Clark says, when horses are inclined to drink, but refuse warm water, he never found any bad con-



sequences follow from indulging them with cold, after adding a little oat-meal, and giving it in a very small quantity at a time. "I was once," says he, "called to a horse that had got what is called a *pissing drink*, for a thickness in his legs. The drench, I was informed, consisted of eight ounces of yellow rosin, in powder, a table spoonful of oil of turpentine, and about half that quantity of oil of juniper, in a quart of forge water. The horse was very sick; he refused both food and water; his pulse was hard and quick, his mouth dry and parched, his legs and ears cold, his belly greatly distended, &c." He was immediately bled; after which he was back-raked; in performing which the operator was sensible of uncommon heat in the body. An emollient clyster was then given; and half a pailful of water, lukewarm, was poured into his stomach, after which he seemed considerably relieved. He then staled a little, his urine being reddish in colour and very thick. Water was then offered him, of which he drank with more freedom. He afterwards began to stale very profusely, and which continued, with short intervals, for the space of twenty-four hours; which reduced him so considerably, that it was some time afterwards before he recovered his flesh and strength. Mr. Clark says he has sometimes met with cases attended with the above symptoms, when horses had had improper physic, or bad drugs given them; which he treated in the same manner, and with success.

In the above case, he supposes that the drench remained in the stomach of the animal undigested. Of course, the latter was oppressed, and its action suspended by the rosin, which was near double the quantity that should have been given even to the most robust horse. As the drench could not be thrown up again by the mouth, a horse having no power to vomit, the pouring water into the stomach contributed to dilute and protrude it out at the lower orifice into the intestines. There it was absorbed, and, in the course of the circulation, carried by the renal vessels to the bladder. The bleeding contributed to remove the spasmodic constriction which had taken place; and the clyster was of use in emptying the intestines, particularly the rectum, and, thus removing the pressure from the neck of the bladder, leaving it free to expel its contents.

The same process will succeed when horses have had improper physic given them, that does not operate, or bad medicines that oppress the stomach. The clysters, however, are to be repeated twice or thrice, in order to empty the

intestinal canal, and forward the discharge of what has been hurtful, till it is expelled.

Medicines in veterinary practice are usually exhibited in the forms of BALLS or of DRINKS (see those articles). For some useful cautions as to the administration of them in cases of a swelled throat, of fever, &c. see the articles, FEVER, and THROAT.

MEDITULLIUM, is that spongy substance between the two plates of the cranium, and in the interstices of all laminated bones.

MEDULLA OBLONGATA, a continuation of the medullary substance of the cerebrum and cerebellum, which passes downwards, and a little backwards to the foramen magnum occipitale, where it assumes the name of *medulla spinalis*. It is rather of a depressed pyriform figure, though it is called oblong. It rises by two crura from the cerebrum, and two peduncles from the cerebellum; the enlargement formed from the union of these is called *pons varclii* or *tuberculum annulare*, behind which is a stricture upon the *medulla oblongata*, and then an enlargement, which have the name of *corpora pyramidalia*. From the *medulla oblongata* spring the *medulla spinalis*, and all the nerves that pass from the head, except the first and second pairs. If the *medulla oblongata* is injured, death is the consequence immediately. See BRAIN.

MEDULLA SPINALIS, termed CEREBRUM ELONGATUM; is the continuation of the medulla oblongata, from the foramen magnum occipitale, through the vertebræ of the neck, back, and loins. It is of different sizes: in the neck it is flat and broad; in the back, small; in the loins, large; and at last it becomes a bundle of nerves, which have the name of *cauda equina*, because when taken out, and extended in water, they resemble a horse's tail. See the articles, BRAIN, and MARROW.

MEGRIM, a term used to denote any violent pain in the head, which occupies only one side. It is the disease called HEMICRANIA. The old farriers have employed this term in a very vague and unintelligible manner.

MEL, honey. See HONEY.

MELAMPYRUM. This name is compounded of *μελας*, black, and *πωρος*, wheat, because it most resembles wheat. It is also called *triticum vaccinum*, *cratægonum*, PURPLE COW-WHEAT. It is called *cow-wheat*, because it is very grateful to black cattle. It is found among corn in many countries, particularly Friesland and Flanders. Those that eat it are affected as if they had eaten darnel; but by use it is eaten without any such ill effect. There is a wild species, which is called *satureia lutea sylvestris*.

**MELICERIS**, in the horse, an encysted tumour so called from its resemblance to a honey-bag. It appears on the joints, throwing out a gluey matter like honey. The usual way of curing the melicerides is, to burn them with red-hot irons, and heal the ulcers with rosin melted with hog's-lard.

**MELILOT**, **MELILOTUS** (from *μελι*, *honey*, and *λωτος*, *a kind of lotus*, which smells like honey, hence its name). It is also called *lotus sylvestris*, *sertula campana*, *trifolium caballinum*, *corona regia*. Common melilot; the *trifolium melilotus*, Linn. It is a plant with smooth, oval, striated leaves, standing three together on slender pedicles, and round, striated, branched stalks, terminated by long spikes of papilionaceous flowers drooping downwards, which are followed by short, thick, wrinkled pods, containing each one or two roundish seeds. It is annual, or biennial, and found in flower in hedges and corn-fields the greatest part of the summer.

It is esteemed a resolvent, emollient, and anodyne, and participates of the virtue of chamomile. Its taste is unpleasing, subacid, subsaline, but not bitter; when fresh it has not much smell, but in drying it acquires a strong one, of the aromatic kind, but not agreeable. The distilled water of melilot, though of little smell itself, remarkably heightens that of other substances. It formerly gave name to a plaster, to which its juice gave a green colour; but it is now seldom used in human diseases, though often recommended by the old veterinary writers. Boerhaave mentions twelve species, and Dale adds another; but none of them are now in much use.

**MELLIT**, in a horse, a dry scab growing upon the heels of his fore-foot. Farriers cure it after the following manner:

Take of Common honey, half a pound;

Black soap, a quarter of a pound:

Having mingled them well together, add

Vinegar, four or five spoonfuls;

Alum, finely powdered, half an ounce;

Fine flour, two spoonfuls.

Let all be well mixed together; clip away the hair from the part affected, and apply it to the sore, after the manner of a plaster, and let it remain five days. Then take it off, and having washed all the leg, foot, and fore, repeat the same application as there may be occasion.

**MEMBRANE**, in anatomy, a web of several sorts of fibres interwoven together for the covering and wrapping up certain parts. The fibres of the membranes give them an elasticity, whereby they can contract, and closely grasp the parts they contain; and their nervous fibres

give them an exquisite sense, which is the cause of their contraction: they can, therefore, scarcely suffer the sharpness of medicines, and are difficultly united when wounded. In their texture there is a number of small glands, which separate a humour fit for moistening the parts which they contain. By reason of the thickness and transparency of the membranes, the ramifications of the blood-vessels are more apparently to be seen in them than in any other part of the body: here the innumerable divisions, windings, and turnings, serpentine progressions, and frequent anastomoses, not only of veins and arteries together, but also of veins with veins, and arteries with arteries, make a most agreeable embroidery, and delicate network, covering the whole membrane. Nor is nature always constant to the same disposition, but delights in variety here as well as in the disposition of the branches and leaves of plants and trees. Those that cover the solid parts are properly called membranes, and have their particular names: as the *peritonæum*, which wraps up all that is contained in the abdomen; the *pleura*, that which lines the thorax; the *pericæum*, covering the bones; and the *pericardium*, the heart. Those which form the coats of vessels, and which contain the secretions, as those of the veins and arteries, stomach, bladder, intestines, testicles, &c. are called *tunics*, or coats; and those which cover and embrace the brain, as the dura mater, and the pia mater, are called *meninges*. Of all these kinds of membranes, some are thin, and some are thick; and the same membrane is thick in some places and thin in others, as in the *membrana adiposa*, which is thicker in the neck than in any other part of the body. The use of the membranes is to cover and wrap up the parts, and strengthen them, to save them from external injuries; to preserve the natural heat; to join one part to another; to sustain small vessels, and the nerves which run through their duplicature; to stop the return of the humours in their vessels, as the valves stop the returning of the blood in the veins and heart; of the chyle in the lacteal and thoracic duct; and of the lymph in the lymphatic vessels. By the *membrana adiposa* is most commonly understood that part of it only which lies next the flesh, and which contains but little fat in its cells; and therefore appearing more membranous than the rest, is said to be the basis of the *cellulæ adiposæ*. And even some part of this has been taken by anatomists for the *membrana carnosæ*, on account of its redness; for here the blood-vessels lie very thick, the vessels not being distended with fat. Anatomists do



generally assert, that there is a *membrana communis musculorum*, being led into that mistake by the aponeurosis of several muscles; whereas, upon stricter observation, there is no such thing to be found. The *membrana propria musculorum* is that which immediately covers all and every one of the fibres of a muscle, and is closely tacked to them. There is another called *membrana communis vasculorum*, which is a thin membrane, and accompanies almost all the vessels of the body. All these membranes receive veins, arteries, and nerves, from the parts which are nearest to them.

**MEMBRANA ADIPOSA.** See the preceding, and **CELLULAR MEMBRANE.**

**MEMBRANA CARNOSA**, the same as *Panniculus carnosus*. See **PANNICLE**; also **Plate VI.** and the description under the article **EXTERIOR.**

**MEMBRANA PITUITARIA.** See **Plate II.** and the description under **ANATOMY.**

**MEMBRANOSUS MUSCULUS**, a muscle of the human leg, so called from the large membranous expansion it is continued with, inclosing all the muscles of the tibia and tarsus; whence it is also called *fascia lata*. See **FASCIA.**

**MEMORY**, that faculty in man and other animals whereby the mind repeats things received by former sensations; or, in other words, the calling to mind known and past things; as when we conceive heat or light, sweet or bitter, &c. When the object is removed, we find it nevertheless in the store-house of our ideas. Many philosophers, as well as physicians, have been at great pains to give some intelligible account of this power, but without any farther success than to puzzle themselves and others more than they were before. Memory is said, in brutes, to stand in the place of reason; some facts, however, recorded of the most sagacious animals, have led to doubts as to this limitation.

**MENINGES** (*μηνιγγες*, the meninges, or matres), so called from being the supposed origin of all the other membranes. This term is used particularly for the *dura* and *pia mater*. See **BRAIN.**

**MENSTRUUM**, any liquor used as a solvent, or to extract the virtues of ingredients by infusion, decoction, &c. The principal menstrua, made use of in pharmacy, are water, vinous spirit, oils, acids, and alkaline liquors. Water is the menstruum of all salts, of vegetable gums, and of animal jellies. Of the first it dissolves only a determinate quantity, though of one kind of salt more than of another; and being thus saturated, leaves any ad-

ditional quantity of the same salt untouched. It is never saturated with the two latter, but unites readily with any proportion of them, forming, with different quantities, liquors of different consistencies. It takes up likewise, when assisted by trituration, the vegetable gummy resins, as ammoniacum and myrrh; the solutions of which, though imperfect, that is, not transparent, but turbid and of a milky hue, are nevertheless applicable to valuable purposes in medicine. Rectified spirit of wine is the menstruum of the essential oils and resins of vegetables; of the pure distilled oils of animals, and of soaps, though it does not act upon the expressed oil and fixed alkaline salt, of which soap is composed. Hence, if soap contains any superfluous quantity of either the oil or salt, it may, by means of this menstruum, be excellently purified therefrom. It dissolves, by the assistance of heat, volatile alkaline salts; and more readily the neutral ones, composed either of fixed alkali and the acetous acid, as the sal diureticus, or of volatile alkali and the nitrous acid. Oils dissolve vegetable resins and balsams, wax, animal fats, mineral bitumens, sulphur, and certain metallic substances, particularly lead. The expressed oils are, for most of these bodies, more powerful menstrua than those obtained by distillation; as the former are more capable of sustaining without injury a strong heat, which is in most cases necessary to enable them to act. All acids dissolve alkaline salts, alkaline earths, and metallic substances. The different acids differ greatly in their action upon these last; one dissolving some particular metals, and another, others. The vegetable acids dissolve a considerable quantity of zinc, iron, copper, and tin; and extract so much from the metallic part of antimony as to become powerfully emetic: they likewise dissolve lead, if previously calcined by fire; but more copiously if corroded by their steam. The marine acid dissolves zinc, iron, and copper; and though it scarce acts on any other metallic substance in the common way of making solutions, may nevertheless be chemically combined with them all except gold. The corrosive sublimate and antimonial caustic of the shops are combinations of it with mercury and the metallic part of antimony, effected by applying the acid in the form of fume to the subjects at the same time strongly heated. The nitrous acid is the common menstruum of all metallic substances, except gold and the antimonial semi-metal, which are soluble only in a mixture of the nitrous and marine. The vitriolic acid easily dissolves zinc, iron, and copper; and may be

made to corrode, or imperfectly dissolve, most of the other metals. Alkaline lixivia dissolve oils, resinous substances, and sulphur. Their power is greatly promoted by the addition of quick-lime; instances of which occur in the preparation of soap and in the common caustic. Thus assisted, they reduce the flesh, bones, and other solid parts of animals, into a gelatinous matter. Solutions made in water and spirit of wine possess the virtue of the body dissolved; whilst oils generally sheath its activity, and acids and alkalies vary its quality. Hence watery and spirituous liquors are the proper menstrua of the native virtues of vegetable and animal matters. Most of the foregoing solutions are easily effected, by pouring the menstruum on the body to be dissolved, and suffering them to stand together, for some time exposed to a suitable warmth. A strong heat is generally requisite to enable oils and alkaline liquors to perform their office; nor will acids act on some metallic bodies without its assistance. The action of watery and spirituous menstra is likewise expedited by a moderate heat, though the quantity which they afterwards keep dissolved is not, as some suppose, by this means increased. All that heat occasions these to take up, more than they would do in a longer time in the cold, will, when the heat ceases, subside again. The action of acids on the bodies which they dissolve is generally accompanied with heat, effervescence, and a copious discharge of fumes. The fumes which arise during the dissolution of some metals in the vitriolic acid prove inflammable: hence, in the preparation of the artificial vitriols of iron and zinc, the operator ought to be careful, especially where the solution is made in a narrow-mouthed vessel, lest, by the imprudent approach of a candle, the exhaling vapour be set on fire. There is another species of solution in which the moisture of air is the menstruum. Fixed alkaline salts, and those of the neutral kind, composed of alkaline salts and the vegetable acids, or of alkaline earths, and any acid except the vitriolic, and some metallic salts, on being exposed for some time to a moist air, gradually attract its humidity, and, at length, become liquid. Some substances, not dissoluble by water in its grosser form, as the butter of antimony, are easily liquified by this slow action of the aerial moisture. This process is termed *deliquation*. The cause of solution assigned by some naturalists, namely, the admission of the fine particles of one body into the pores of another whose figure fits them for their reception, is not just

or adequate, as Dr. Shaw very well remarks; but hypothetical and ill-prefumed; since we find some bodies will uniformly dissolve their own quantity of others, as water does of Epsom salt, alcohol of essential oils, mercury of metals, one metal of another, &c; whereas the sum of the pores or vacuities of every body must be necessarily less than the body itself, and consequently those pores cannot receive a quantity of matter equal to the body wherein they reside. See the articles AFFINITY, SOLUTION, EXTRACTION, FUSION, &c.

How a menstruum can suspend bodies much heavier than itself, which very often happens, may be conceived by considering, that the parts of no fluids can be so easily separated but they will a little resist or retard the descent of any heavy bodies through them; and that this resistance is, *ceteris paribus*, still proportionable to the surfaces of the descending bodies. But the surface of bodies do by no means increase or decrease in the same proportion as their solidities do: for the solidity increases as the cube, but the surface only as the squares of the diameter; wherefore it is plain, very small bodies will have much larger surfaces, in proportion to their solid contents, than larger bodies will, and consequently, when grown exceeding small, may easily be buoyed up in the liquor.

MEPHITES, *MEPHITIS*, and,

MEPHITIC EXHALATIONS, are poisonous or noxious steams, issuing out of the earth, from what cause soever. The most remarkable place of this kind is the Grotto del Cani, near Puzzuoli, about two miles from Naples in Italy, the steams of which kill dogs or other animals, when brought within its reach: a very curious account of this, and the manner of its efficacy, is given by Dr. Mead, in his *Essay on Poisons*. The word mephitic signifies stinking, particularly such a smell as arises from brimstone and alkali, or from corrupt water mixed with earth and brimstone. It is, however, chiefly applied to fixed air.

MERCURY, a medicine popularly known by the name of QUICKSILVER. The importance of this remedy, and its various preparations, calls for a particular account of its chemical and medicinal properties.

This metallic substance differs from all other metals, by its property of retaining the fluid state at the ordinary temperature of the atmosphere. It possesses the metallic opacity and brilliancy, and even acquires malleability when deprived of fluidity by a proper degree of cold.

It has been determined that the weight of a



cubit foot of this metal is 949 pounds, and that its specific gravity is 13.5681. It is met with in the earth in different states.

No other method has hitherto been discovered of fixing mercury but that of extreme cold. This metallic substance, which is naturally fluid, is capable of rising even by a very moderate degree of heat, as is proved by an experiment of Mr. Achar'd's, who, having left a dish containing twenty pounds of mercury over a furnace which was daily heated, experienced a salivation at the end of several days; as did likewise two other persons who had not quitted the chamber. The heat was estimated at about 73° of Fahrenheit. It is improper to oppose the evaporation or dilatation of this metal by heat, as considerable explosions may be produced.

When it is heated, this metallic fluid boils in the same manner as other liquids, and for this purpose it does not even require a very considerable heat: the ebullition consists merely in its transition to the vaporous state; for it may be distilled like other fluids, and by that means be cleared of its impurities. Dr. Boerhaave had the patience to distil the same mercury five hundred times successively, from which he found that the metal suffered no other change than that of affording a grey powder, which might be converted again into running mercury by mere trituration.

This substance is not easily changed in the air; but if the action of the air be assisted by heat, it gradually loses its fluidity; and at the end of several months forms a red oxide, which has been distinguished by the name of *Precipitate per se*. The apparatus made use of for this operation is a very large and very flat bottle, closed with a stopper, in which there is a capillary perforation. The mercury within the bottle by this means possesses the contact of air; and by disposing the apparatus upon a sand-bath, and keeping up the proper degree of heat in the fluid, the oxide may be obtained in the course of several weeks. This oxide of mercury gives out its oxygen by simple heat, without any intermedium; and the mercury resumes its metallic form: one ounce affords about a pint. A quintal of mercury takes up about eight pounds of oxygen. The red oxide of mercury, exposed to heat, sublimes in close vessels, and may be converted into a very beautiful glass. This has been constantly observed by Mr. Chaptal when he has made the red oxide by means of the nitric acid, according to the process usual with chemists.

Water that has been boiled upon mercury contracts a vermifuge property from it; and that which remains over it for a length of time acquires a very evident metallic taste. The sulphuric acid does not act upon mercury, unless assisted by heat. In this case sulphureous gas is disengaged, and a white powder falls down, the quantity of which becomes greater in proportion as the acid is decomposed. This oxide weighs one third more than the mercury made use of, and it is very caustic: if hot water be poured on it, it becomes yellow; and when urged by a violent heat, it affords oxygenous gas, and the mercury resumes its natural form. This yellow oxide, obtained by means of the sulphuric acid, is known by the name of *Turbith Mineral*, and has long been considered as a sulphate of mercury. Mr. Baumé has shewn that it does not contain a particle of acid; and it appears that the water which develops its yellow colour, seizes the small quantity of undecomposed acid which was mixed with the oxide. If the water which has been poured on it be evaporated, a salt is obtained in small, soft, and deliquescent needles, which may be deprived of their acid by the simple effusion of water. This fluid precipitates the mercury from them in the form of a yellow powder.

The nitric acid which is employed in commerce, at the strength of thirty-five degrees, dissolves mercury with violence, and even without the assistance of heat. This solution is accompanied with the disengagement of a considerable quantity of nitrous gas; because it is necessary that the acid should reduce the metal to the state of oxide before it can act upon it. One part of the acid is consequently employed in disposing the metal for solution, and the other dissolves it in proportion as it is oxidated. This is what happens when the sulphuric acid is digested upon a metal; one portion is decomposed, which reduces the metal into an oxide, while the other dissolves it. The manner of effecting the solution of mercury in the nitric acid has an influence on the properties of the mercurial nitrate. Bergman has remarked that the solution which is made slowly and quietly, without disengagement of nitrous gas, affords no precipitate on the addition of water; whereas that which is made by the assistance of heat, and with loss of nitrous gas, affords a precipitate. It therefore appears that the nitric acid, assisted by heat, is capable of becoming loaded with an excess of mercurial oxide, which it lets fall when diluted with water. The method of performing the solu-

tion, and the process made use of to crystallize it, has also an equal influence upon the form of the crystals. 1. The solution made in the cold, and left to spontaneous evaporation, affords crystals which seemed to Mr. De Lisle to be octahedral pyramids, truncated near their base, and having the four angles resulting from the junction of the bases of their pyramids likewise truncated. 2. If the same solution be evaporated by art, long and acute blades are obtained, lying one upon the other, and striated obliquely across. 3. The solution of mercury effected by heat affords flat and acute needles striated in a longitudinal manner.

The nitrate of mercury is corrosive; it detonates upon coals when it is very dry, and emits a whitish flame of a considerable brilliancy. When heated in a crucible, it is fused, and emits a considerable quantity of nitrous gas, together with its water of crystallization. The remaining oxide becomes yellow; and at length assumes a lively red colour, and forms the substance called *red precipitate*. In order to make a very fine red precipitate, the mercurial solution must be put into a retort, and distilled until no more vapours come over. An additional quantity of nitric acid must then be poured on the remainder, and likewise distilled off. After three or four repeated distillations, a very beautiful precipitate is obtained in small crystals, of a very superb red colour. The solution of mercurial nitrate forms mercurial water, which is of use to ascertain the presence of sulphuric and muriatic salts in mineral waters. The acids, the alkalis, the earths, and some of the metals, likewise precipitate mercury from its solution in the nitric acid; and these precipitates always consist of the oxides of mercury in a greater or less degree of perfection, upon which circumstances the variation in their colour depends.

It has been discovered by Mr. Bayen, that some of these precipitates possess the property of fulminating, when mixed with a small quantity of sublimed sulphur. Those which he has particularised are the following: 1. The precipitate of mercury from its solution in the nitric acid by the assistance of the carbonate of ammoniac. 2. The precipitate of the same fluid by lime water. 3. The precipitate of the solution of corrosive sublimate by lime-water. Half a drachm is to be triturated with six grains of sublimed sulphur. After the detonation, a violet-coloured powder remains, which affords a fine cinnabar by sublimation.

The muriatic acid does not directly act upon mercury: but if it be digested for a long time

upon the metal, it oxidates it, and at length dissolves the oxide, as may be concluded from the experiments of Homburg. This acid completely dissolves the mercurial oxides; and when these oxides are nearly in the metallic state, or charged with but a small quantity of oxygen, the muriate of mercury is formed. But if, on the contrary, the oxide of mercury be saturated with oxygen, the oxygenated muriate of mercury, or corrosive sublimate of mercury, is produced. The oxygenated muriate of mercury may be formed according to two methods; the dry or the humid. To prepare this salt in the dry way, the operator may proceed in various manners. 1. Equal parts of dried nitrate of mercury, decrepitated muriate of soda, and sulphate of iron calcined to whiteness, are mixed together. This mixture being exposed to sublimation, the product which arises is corrosive sublimate. 2. In Holland, running mercury is used instead of the nitrate of mercury; and the same results may be obtained by using any oxide of mercury whatever. 3. Equal parts of the sulphure of mercury, and the decrepitated muriate of soda, afford the same salt by sublimation. 4. Mr. Monet asserts that he has obtained corrosive sublimate by treating the dry muriate of soda, and a mercurial oxide, in the way of distillation in a retort. If mercury be dissolved in the oxygenated muriatic acid, the solution, when concentrated, affords very fine corrosive sublimate. This substance may likewise be obtained by precipitating the mercury from mercurial water by the same acid, and evaporating the solution. Mr. Chaptal has obtained very fine sublimate by presenting a mercurial oxide, sufficiently loaded with oxygen, to the ordinary muriatic acid. One pound of muriatic acid, at the strength of twenty-five degrees poured upon one pound of red oxide by the nitric acid, discolours it; in a short time dissolves it with a violent heat; and this solution, diluted with water, and properly evaporated, affords from twelve to fourteen ounces of crystals of corrosive sublimate. The corrosive muriate (*sublimate*) of mercury has a styptic taste, followed by an exceedingly disagreeable metallic taste. When placed on hot coals, it is dissipated in fumes; when slowly heated in subliming vessels, it rises in prismatic crystals, so much flattened, that their facets are scarcely distinguishable. This salt is soluble in nineteen parts of water; and when the solution is concentrated, it affords crystals similar to those obtained by sublimation.

This salt is decomposed by barytes, magnesia, and lime. Half a drachm of corrosive sublimate



in powder, thrown into a pint of lime-water, forms a yellow precipitate. This fluid is known by the name of *phagedenic water*.

By means of fixed alkali, mercury is precipitated in an orange-coloured oxide; and by volatile alkali in the form of a white powder, which becomes brown in a short time. If the same muriatic acid be combined with a less perfect oxide of mercury, it forms the mild muriate of mercury, or *mercurius dulcis* (see CALOMEL): and this combination may also be made by two methods; by the dry or the humid. 1. In the dry way, four parts of corrosive muriate of mercury are triturated in a mortar with three of running mercury. When the mercury has disappeared, the mixture is put into phials, and sublimed three successive times, in order that the combination may be more accurate. This sublimate differs from corrosive sublimate by its insolubility in water, its insipidity, and the form of its crystals, which are tetrahedral pyramids, terminated by four-sided pyramids. To obtain this regular form, it is necessary that the sublimation should be made at a moderate heat; for, if the heat be sufficient to liquefy the salt, the result is merely a crust, with no appearance of crystals. As the trituration of corrosive sublimate is dangerous, on account of the powder which rises, Mr. Baumé has recommended a small quantity of water to be poured upon the mixture, which accelerates the trituration, and prevents the rising of the destructive powder. Mr. Bailleau has likewise proposed the incorporating of corrosive sublimate with water, and triturating it with running mercury. The combination is completed by digesting the mixture on a sand-bath by a gentle heat. The matter becomes white, and requires only a single sublimation. Whenever it is suspected that mercurius dulcis still retains a portion of corrosive sublimate, nothing more is necessary to be done than to triturate it, and pour boiling water upon it; for by this means the whole of the soluble salt which may have remained is carried off. It has been shewn by Mr. Baumé, that there is no intermediate state between mercurius dulcis and corrosive sublimate. If less mercury be added to the sublimate, a proportional quantity of mercurius dulcis only sublimes, and the rest rises in the form of corrosive sublimate: if a greater quantity of mercury be added than is necessary to convert the whole into mercurius dulcis, the excess remains in the form of running mercury. The same chemist has also proved, that a portion of the mercury is always lost at each sublimation; and that a small quantity of corrosive sublimate is formed,

which arises from the alteration of the mercury. Hence it follows that what has been called the *mercurial panacea*, which is made by subliming mercurius dulcis eight or nine times, is a more suspicious remedy than the mercurius dulcis itself. Mercurius dulcis may likewise be made by decomposing mercurial water by a solution of the muriate of soda. The white precipitate which is obtained may be sublimed, when it will form an excellently good calomel. This process seems to have been communicated by Mr. Chaptal to the Society of Sciences at Montpellier, some time before Mr. Scheele made it known to the world. The corrosive muriate of mercury differs therefore from the mild muriate in the state of its acid. Mercurial oxides are also equally soluble in the other acids. A solution of borax, mixed with mercurial water, forms a very abundant yellow precipitate, which is nothing else but the combination of the acid of borax and mercury. A small quantity of this salt remains in solution, which may be obtained in brilliant crystals by means of evaporation.

The acetous acid likewise dissolves the oxide of mercury, and affords white foliated crystals. When mercury is precipitated from a solution of the acetate of mercury, it combines with the acidulous tartarite of pot-ash, and forms the vegeto-mercurial water of Preßavin. The *acetate of mercury* is also the basis of Keyser's famous pills.

When mercury is artificially mixed with sulphur, it forms the red or black sulphures, known, on account of their colours, by the names of ETHIOPS or CINNABAR. In order to form the ethiops, or black oxide of mercury, three methods may be followed: the first is, by triturating four ounces of mercury with twelve ounces of sublimed sulphur in a glass mortar. In this case the result is a black powder, which is called *Ethiops mineral*. In the second method, four ounces of sulphur are fused in a crucible, and one ounce of mercury afterwards extinguished in it. The mixture readily takes fire, but the inflammation must be prevented; and the blackish residue, being pounded, will afford a greenish powder, which is a true ethiops. The third method of preparing ethiops is by pouring the sulphur of pot-ash upon mercurial water.

By sublimation these ethiops afford different kinds of cinnabar, or the red sulphurated oxide. But in order to make it with a greater degree of accuracy, four ounces of sublimed sulphur are fused in an unglazed earthen pot, and one pound of mercury mixed with it by stirring or

agitation. When these substances have combined to a certain degree, the mixture spontaneously takes fire, and is suffered to burn about a minute. The flame is then smothered, and the residue pulverized, which forms a violet powder, usually weighing about seventeen ounces five drachms. This powder, being sublimed, affords a sublimate of a livid red colour; which, when levigated, exhibits a fine red colour, known by the name of *vermilion*. Three parts of cinnabar, mixed with two ounces of iron filings, afford very pure mercury by distillation, which is called *mercury revived from cinnabar*. Lime, the alkalis, and most of the metals, may be substituted instead of the iron. This metallic substance amalgamates with most other metals; and on this property depends the art of water-gilding, or gilding upon metals; the tinning of glasses; the working of gold and silver mines, &c. It is likewise used in the construction of meteorological instruments, for which purposes it possesses several advantages over other fluids. It does not easily freeze; is more easily and gradually dilatable, as has been shewn by the fine experiments of Bouquet and Lavoisier; and different specimens of it have very nearly the same quality.

The common name of **QUICKSILVER** (*Hydrargyrum*), has been preferred by the London College; hence the titles of its various chemical preparations, *Hydrargyrum cum sulphure* (*Ethiops mineral*), *Hydrargyrum vitriolatus* (*Turbith mineral*), &c. Modern philosophers and chemists, however, retain the name of mercury.

**MES-AIR**, in the manege, half a *terra a terra*, and half a *corvet*. See those articles.

**MESARAIC**; the same as Mesenteric. See **MESENTERY**.

**MESENTERIC**; belonging to the *Mesentery*. Such are the mesaraic arteries, veins, &c. See **MESENTERY**.

**MESENTERY**, *mesenterium* 'μεσεντεριον, from μεσον, *medium*, the middle, and εντερον, *intestinum*, a gut), because it is in the middle of the guts: for all the bowels lying in a little space, they are kept from entangling with one another by the mesentery, which is a fat membrane placed in the middle of the abdomen, almost of a circular figure, with a narrower production, to which the end of the colon and beginning of the rectum are tied. Its dimensions differ according to those of the animal: in the human subject it is about four fingers breadth and a half in diameter; its circumference, being full of plaits and foldings, is about three ells in length. The intestines, which are joined like a

border on this circumference, are about eight or nine ells long; so that to every inch of the circumference of the mesentery there are three inches of intestine fastened. The mesentery itself is strongly tied to the three first vertebrae of the loins. It is composed of three laminae: the inner, upon which the glands and fat lie, and the veins and arteries run, is its own proper membrane; and the other two, which cover each side of the proper membrane, come from the peritonæum. Between the two external laminae of the mesentery run the branches of the arteria mesenterica superior and inferior, which bring the blood to the intestines, and the venæ mesaraicae, which, being branches of the portæ, carry the blood back to the liver. Here all the large branches, both arteries and veins, communicating with one another, proceed directly to the guts, where, with the nerves from the plexus mesentericus, they divide into an infinite number of small branches, which spread themselves exceeding finely upon the coats of the intestines. The venæ lacteæ and lymphatic vessels run likewise upon the mesentery, in which there are also several vesicular glands, the biggest of which, in the middle of the mesentery, is called *pancreas Asellii*. These glands receive the lymph and chyle from the **LAC-TEALS**, which see.

**MESOCOLON** (μεσocolon); that part of the mesentery which belongs to the great guts.

**MESOGASTRION**; that substance on the concave part of the stomach, between the orifices, which attaches it to the adjacent parts.

**MESOGLOSSI**, the muscles called **GENIOGLOSSI**.

**MESORECTUM**. It is a production of the peritonæum which invests the intestinum rectum. About the middle of the fore-side of this intestine it forms a femicircular fold, which appears when the intestine is empty, but it is lost when it is full.

**METACARPUS** (μετακαρπιον, from μετα, *post*, behind, and καρπος, *manus*, the hand), in the human subject, is made up of four bones, which answer the four fingers; that which sustains the first finger is the biggest and largest: they are round and long, a little convex and round towards the back of the hand, and concave and plain towards the palm. The metacarpal bones in the horse are called the flank bones. See Mr. STUBBS's skeleton of the horse in Plate V. and the description 4, 5, 6, 7, "*Bones in the right upper limb*," under the article **BONES**.

**METALS** (from the Hebrew term *metil*, a



*hard substance*), a class of substances to which the art of healing is very essentially indebted. Their very great weight, and opaque shining appearance, distinguish metals from all other bodies in nature. Very few substances have half the specific gravity of the lightest among the metals. They are all fusible, though with different degrees of heat; and if the fusion be made in close vessels, they fix again by cold, without having suffered any change, except that of external appearance, assuming the form of the containing vessel. Some of them are malleable, and capable of being considerably extended by the hammer. Those which possess this property are called *entire metals*, or *metals*, in contradistinction to such as are more brittle, and are called *femimetals*.

Metallic substances are also called *perfect*, or *imperfect*. The first are such as undergo no lasting change by any heat which can be applied to them, at least in common furnaces. The second, when exposed to a strong heat, with the access of vital air, are changed by a process similar to burning, and in some of them with an actual flame, into a brittle dull substance called calx, the whole of which is heavier than the metal from whence it came, though its specific gravity is not so great; some are even converted into acids. If the calx of a metal be exposed to a strong heat in a closed vessel, with some inflammable matter, it recovers its metallic state. This is called *reduction*, or reviving of the metal.

All metals are imperfect, except gold, silver, and platina. The imperfect metals are, mercury, lead, copper, iron, tin; and the femimetals, bismuth, nickel, arsenic, cobalt, zinc, antimony, manganese, wolfram, molybdæna, and uranite:—the names arsenic, antimony, manganese, wolfram, and molybdæna, being used to denote the mineral substance from which the femimetals are obtained. The femimetals themselves are distinguished by the names of *regulus*, as regulus of arsenic, &c. though moderns often use the simple term to denote the femimetal itself alone. In due degrees of cold, quicksilver becoming malleable ranks it among the metals. In point of gravity, the first is gold, then platina, mercury, lead, silver, copper, iron, and tin.

Sulphur is the bond of union in all metals. Metals are bituminous substances which have undergone a long digestion; for by depriving them of their sulphur they are reduced to ashes, and then to glass; and by restoring the sulphur this glass is converted into metal again. Ores

are the compositions in which metals are found, or the beds in which they are produced: metals and minerals mostly abound with sulphur and arsenic, which are separated in the smelting furnace, and the body does not become truly metallic until they are separated; and sulphur and arsenic added to metals bring them to ores again.

All the metals dissolve in acids, some in one and some in another; and in most of these solutions the inflammable principle of the metals is absorbed or expelled. Gold, silver, and mercury, suffer no resolution or dissipation of their parts from any known power; if changed into the appearance of calx, they are recoverable without any loss.

Such are antimony, calamine, &c. See the accounts of them as medical remedies under their several names.

METALLURGY (from *μέταλλον*, a metal, and *εργον*, work); that part of chemistry which is concerned in the separation, depuration, and preparation of metals. Sometimes it implies the digging them out of the mines.

METAMORPHOSIS, *μεταμορφωσις*, a term applied by Harvey to the changes an animal undergoes, both in its formation and growth; and by several to the various shapes some insects in particular pass through, as the silkworm, and the like.

METAPTOSIS, *μεταπίωσις*, denotes the change of one disease into another, and is distinguished into a *diadoche*, *διαδοχη*, when the translation proves salutary, as of congealed matter from the nobler parts to those which it can do no harm to, but be critically exterminated; and a *metastasis* *μεταστασις*, which is a change for the worse, or without any such advantage.

METASTASIS (*μεταστασις*, from *μεθίστημι*, *transfero*, to change, or *translate*), signifies the removal of a humour from one part to another, which is most commonly known in inflammatory cases: sometimes also in grosser humours, the reflux blood takes up digested matter from one part, and deposits it upon another. It is a species of the METAPTOSIS, which see.

METATARSUS (*μεταταρσιον*, from *μετα*, *post*, behind, and *ταρσος*, *crates*, or *tarsus*, the foot), the instep. This part consists, in the human subject, of five bones. That which sustains the great toe is the thickest, and that which sustains the next toe is the longest; the rest grow each shorter than the other. They are longer than the bones of the human metacarpus. In other things they are like them, and

they are articulated to the toes, as those of the metacarpus are to the fingers. For these bones in the horse, see Plate V. and the description, 14, 15, &c. of bones of "*the lower limb*," under BONES.

**METTLE**, a cant term used by dealers in horses to express a great deal of spirit, vigour, or *heart*, as they otherwise call it. There is great difference between a mettled horse, a horse of vigour, and a fiery horse; but as this is not sufficiently attended to by gentlemen in their purchases of this animal, some general rules for the distinguishing real vigour in a horse may be acceptable.

When a horse is standing still, the rider who has a mind to try whether he has vigour in him should keep him fast with the bridle-hand, and apply the spurs to the hair of his sides; this is called by horsemen pinching. If the horse is impatient under this, gathering himself up, and endeavouring to go forwards, and champs upon the bit, without thrusting out his nose, it is a sign of vigour and right mettle in him. Some caution is to be used, however, in judging by this, to distinguish between a horse that has vigour really in him, and one that has only a fine skin, and is rather ticklish than mettled. This is the case with a great many horses, and is found by their being very sensible of the touch of the spur, and shewing the appearance of a great deal of mettle and vigour when touched, but immediately losing the apprehension of it. These are, in fact, of a dull disposition, and only have a tender skin.

The mettled horse is to be highly valued; but the fiery one is good for nothing. A horse that is truly vigorous should be calm and cool; he should in general move on patiently, and only shew his mettle when it is required of him.

The surest method is to choose such horses as are extremely apprehensive of strokes, and are afraid at the least appearance of their coming. These, at only the closing of the legs and thighs, seem to be seized with fear and alarmed, but that without fretting or fierceness. A horse that walks deliberately and securely, and that, without requiring the whip too often, will go on briskly and without fretting; will go from the walk to the gallop, and as easily from the gallop to the walk again, and continually champs upon the bit, and trots with freedom, upon the shoulders easily, and snorting a little through his nostrils: this is generally a creature of true mettle and vigour, though it does not rise to such a fierceness as is troublesome or dangerous. If to these good qualities a horse be

well upon his haunches, and have a light and easy stop, his head well placed and firm, and the feeling of his bit equal and just, the buyer seldom need to complain of the price. All the good qualities of a horse should, however, never recommend him, unless he has a good mouth (see MOUTH), and is obedient to the spur.

**MEZEREUM**, mezereon, a species of Daphne. The college have introduced the root of this plant into their Pharmacopœia; the part directed is the bark of the root, which enters the decoctum sarfaparillæ compositum. What would be its effects if given to brute animals?

**MIASMA** (from *μιαίνω*, to pollute). Miasmata, as they relate to the diseases both of human and brute animals, are productive of some of the febrile kinds, and of them only, as in the case of **CONTAGION**. They are generally floating in the atmosphere, but not observed to act except when a healthy animal approaches the sources from whence they arise. The idea of contagion properly implies a matter arising from a body under disease; and that of miasma a matter arising from other substances, as from putrifying vegetables, &c.

Dr. Cullen remarks, that the substances imbued with the effluvia from the bodies of the diseased may be called **FOMITES**; and that it is probable that contagions, as they arise from fomites, are more powerful than as they arise immediately from the human body. Further, that though the fomites are possessed of matter from the human body, yet this matter passing from the fomites is called miasma; which requires further to be distinguished from the miasmata arising from marshes, &c. by the epithets human and marsh miasmata.

On this subject of contagion and miasma Dr. Cullen's observations have their value, as being applicable to the theory of contagious diseases in brutes. He says, as fevers are so generally epidemic, it is probable that some matter floating in the atmosphere, and applied to the bodies of men, ought to be considered as the remote cause of fevers. Contagions have been supposed to be of great variety, and it is possible that they may be so; but that they truly are, does not appear clearly from any thing that we know at present. The number of genera and species of contagious diseases, of the class pyrexia, at present known, is not very great. They belong to the order of fevers, of exanthemata, or of profluvia. Whether there be any belonging to the order of phlegmasia is doubtful; and, though it should be supposed, it will not much increase the number of con-



ragious pyrexiae. Of the contagious exanthemata and profluvia, the number of species is nearly ascertained; and each of them is so far of a determined nature, that though they have now been observed and distinguished for many ages, and in many different parts of the earth, they have been always found to retain the same general character, and to differ only in circumstances, which may be imputed to season, climate, and other external causes, or to the peculiar constitution of the several persons affected. It is, therefore, probable, that, in each of these species, the contagion is of one specific nature, and that the number of the contagious exanthemata, or profluvia, is hardly greater than the number of species taken notice of in his system of nosology. While the contagious exanthemata and profluvia are thus limited, it is probable that the contagions which produce the continued fevers are not many; nay, it is not evident that there are more than one common source of them. It is well known that the effluvia constantly arising from the living human body, if long retained in the same place, without being diffused in the atmosphere, acquire a singular virulence, and, in that state, applied to the bodies of men, become the cause of a fever which is very contagious. The late observations on jail and hospital fevers have fully proved the existence of such a cause; and it is sufficiently obvious that the same virulent matter may be produced in many other places. At the same time, the nature of the fevers arising renders it probable that the virulent state of human effluvia is the common cause of such fevers, as they differ only in a state of their symptoms, which may be imputed to the circumstances of season, climate, &c. concurring with the contagion, and modifying its force.

Miasmata arise from various sources, and are of different kinds; but we know little of their variety or of their several effects. We know with certainty only one species of miasma which can be considered as the cause of fever; and, from the universality of this, it may be doubted if there be any other. The miasma, so universally the cause of fever, is that which arises from marshes or moist ground, acted upon by heat. So many observations have now been made with respect to this, in so many different regions of the earth, that there is neither any doubt of its being in general the cause of fevers, nor of its being very universally the cause of intermittent fevers in all their different forms. The similarity of the climate, season, and soil, in which intermittents arise, and the similarity of the diseases arising in different re-

gions, concur in proving that there is one common cause of these diseases, and that this is the marsh miasma. What is the particular nature of this miasma we know not; nor do we certainly know whether or not it differs in kind; but it is probable that it does not, and that it differs only in the degree of its power, or perhaps in its quality, in a given space.

It remains most probable, that the remote causes of fevers are chiefly contagions or miasmata, and neither of them of great variety. Miasmata are supposed to cause intermittents, and contagions to cause continued fevers, strictly so named. It may further be added, that both contagion and miasmata are of a debilitating or sedative quality. They arise from a putrescent matter. Their production is favoured, and their power increased, by circumstances which favour putrefaction; and they often prove putrefactive ferments with respect to the animal fluid. Though fevers generally arise from marsh or diseased animal effluvia, other remote causes of fevers, which have been commonly supposed, cannot with any certainty be excluded. See CONTAGION.

MIDDLE-TEETH of a horse, the same with the gatherers, or nippers. See the articles AGE and TEETH.

MIDRIF. See DIAPHRAGM.

MILIARY GLANDS. See CUTIS.

MILIARY FEVER (from *milium*, millet), a kind of fever to which the human subject is obnoxious, in which there is a copious rash or eruption on the skin, of small pustules resembling millet-seed. As far as we know, brute animals are exempt from this disease.

MILK, a nutritious fluid secreted by animals for the sustenance of their new-born offspring. Where it is taken away periodically by milking, the supply goes on, as in the cow; and hence the great value of that animal in particular to man, who is indebted to her for three of the most useful articles of food, milk, butter, and cheese. How poor a return does he make for these blessings (and for her flesh when the butcher's office has been performed), by neglecting to enquire into the nature of her maladies, and consigning her to the ignorant and unfeeling blacksmith in the hour of sickness or misfortune!

In cases where the mother is lost, or the young animal is too feeble to have recourse to her teats, milk, with sugar, gruel, and a small quantity of spice, is sometimes given as a drench.

MINERALS, are hard bodies dug out of the earth or mine (whence the name), being in

part of a metalline and in part of a stony substance; though, in a more lax signification, some include under it all that is dug out of the earth. Amongst the minerals are found many remedies of a very powerful kind.

**MINIUM**, a substance known by the name of *red lead*. To make it;—let any quantity of lead be melted in an unglazed earthen vessel, and kept stirring with an iron spatula, till it fall into a powder, at first blackish, afterwards yellow, and at length of a deep red colour, in which last state it is called minium; taking care not to raise the fire so high as to run the calx into a vitreous mass.

The preparation of red lead is so troublesome and tedious, as scarcely ever to be attempted by the apothecary or chemist, nor indeed is this commodity expected to be made by them; the preparation of it being a distinct manufacture, as an article of commerce. The makers melt large quantities of lead at once, upon the bottom of a reverberatory furnace built for this purpose, and so contrived, that the flame acts upon a large surface of the metal, which is continually changed by the means of iron rakes drawn backwards and forwards, till the fluidity of the lead be destroyed; after which, the calx is only now and then turned. By barely stirring the calx, as before directed, in a vessel over the fire, it acquires no redness; the reverberation of flame upon the surface being absolutely necessary for this effect. It is said, that twenty pounds of lead gain, in this process, five pounds; and that the calx, being reduced into lead again, is found one pound less than the original weight of the metal.

These calces are employed in veterinary practice as external applications, for abating inflammations, cleansing and healing ulcers, and the like. Their effects, however, are not very considerable; nor are they perhaps of much further real use than as they give consistence to plasters, unguents, &c.

**MISLETOE**, a parasite plant growing on apple, pear, ash, willow, and other trees; but principally on the oak. That produced from the latter has been most commended in medicine; and Gibson speaks of it as a remedy for horses affected with the **STAGGERS**. He says it may be given either in decoction or in powder, “without any great restriction as to the dose.”

**MITHRIDATE**, an electuary so called from Mithridates, king of Pontus and Bithynia, who experiencing the virtues of the simples separately, afterwards combined them; but then the composition consisted of but few ingre-

dients, viz. twenty leaves of rue, two walnuts, two figs, and a little salt: of this he took a dose every morning, to guard himself against the effects of poison.

**MITRAL VALVES**. See **HEART**.

**MIXTION**. Stahl used this expression to signify the union of the first principles in the most simple compounds. In the English language those principles of bodies are emphatically called a *mixt*, which are so intimately united to each other as hardly to manifest themselves on the severest trials (as *was* the case with alkali in glass, acid in flint, &c.) to distinguish them from aggregates or compounds, where the texture is loose, and the parts more easily separated.

**MIXTURE**, amongst physicians, an extemporaneous form of prescription, in which powders are suspended in some watery liquids. Amongst veterinarians, this is named a *drench* or *drink*. See the article **DRINK**.

**MOLA**, *μύλη*, a name for the dentes molares, and for the jaws.

**MOLARES**, grinders, those teeth immediately concerned in grinding down the food, and best fitted by their flat upper surfaces for that office; from *molaris*, a *grind-stone*. See **TEETH**.

**MOLLITIES**, or **MOLLITIES OSSIUM**, a morbid softness of the bones of an animal.

**MOLYBDATES**, are salts formed by the union of the molybdic acid with the different alkaline, earthy, and metallic bases; there are twenty-three species enumerated in M. Fourcroy's Elements of Natural History and Chemistry.

**MOLTEN GREASE**, called also **MORFOUNDER**, or **BODY FOUNDER**. This disorder, Mr. TAPLIN asserts, is produced by too great, sudden, or powerful exertions, when a horse is not in proper condition: as in strong and severe hunting, long and speedy journeys, or hard driving in carriages, when the animal has been just taken from grass loaded with impurities; just out of a dealer's possession, full of light flatulent food; or when naturally too full of flesh for violent exercise. “In such cases,” says he, “from the internal heat, increased circulation, and temporary inflammation, the fat seated upon the membranes in various parts of the body undergoes rarefaction and rapid solution, making distinct efforts for discharge by the different excretories. The proportion nearest the vessels becomes absorbed, and there is produced some degree of fever; another part makes its appearance in the excrements; a third portion fixes upon the lungs, and obstructs respiration; to these a laxation of the intestinal



contents succeeds; and, lastly, a looseness, or scouring; so that in the present instance we plainly perceive the possibility of almost a complication of disorders originating in a single cause, and the foundation of that cause—indiscretion.

“A little reflection upon the incontrovertible truth of this observation will surely point out to every humane master and faithful servant the great danger of over-riding, driving, or fatiguing any horse whatever beyond what is prudent and necessary; especially when not in high condition for the service he may be engaged in, whether on the turf, field, or road. Let it be constantly held in remembrance, more horses are ruined and destroyed by cruelty and neglect than by chance or accident. The subject we now treat on proves, more than any other, the absolute necessity of insuring condition previous to a course of constant business.”

#### See CONDITION.

The symptoms, Mr. Taplin says, are in different subjects more or less violent, according to their state and condition at the time of attack; varying in all, in proportion to the parts most affected by the original cause. “Wherever the solution has proved most partial, the effect will become most predominant; as for instance, upon the bowels, lungs, or circulation of the blood by absorption. In the first, great pain attends the laxation or looseness; in the second, great difficulty of breathing from the expansion of the lungs may produce symptoms of inflammation there. And when the mass of blood is generally affected, and preternaturally loaded, fever must consequently ensue. These symptoms, as before observed, all vary in different subjects; but one is *pathognomonic* or *invariable* in all, which is the general incorporation of a greasy substance with the excrements, nearly similar to the separated particles of congealed oil in frosty weather; previous to the entire solution of the intestinal contents, and so long as the dung retains its usual form, the greasy hue appears only upon the surface, but as it advances in disease it becomes more intimately united.

“So soon as ever these symptoms are perceived, proper methods should be taken to relieve nature from the threatened oppression, by such evacuations as the predominant circumstances direct; at any rate let plentiful bleeding be the first step to reduce present, or prevent approaching, inflammation. If fever has not come on too rapidly, give, so soon as circumstances will permit, the following mild laxative drink:

Take of Senna, two ounces;

Boil it a few minutes in three quarters of a pint of water, with three drachms of ginger bruised; then strain and dissolve in the liquid

Lenitive electuary, four ounces;

Soluble tartar, three ounces; add

Tincture of senna, six drachms;

Tincture of jalap, one ounce. Mix.

“But should the horse be strong and powerful (the disease being in its infancy), give without delay the following purging drink, repeating it in three or four days, if present appearances justify the practice.

Take of Senna, two ounces;

Infuse it in a pint of boiling water with

Salt of tartar, two drachms; Add

Vitriolated magnesia (Glauber's salt), four ounces;

Cream of tartar, two or three drachms.

Dissolve and make the drink.

If the patient be greatly depressed, with palpable fever, disquietude, loss of appetite, and internal painful sensations, make use of the following glyster, which may be easily prepared.

Take of Water gruel, two quarts;

Coarse sugar, half a pound;

Common salt, a handful;

Olive oil, four ounces.

Mix and inject tolerably warm.

To attenuate the blood, relieve the lungs, and take off the load from the circulation, as well as to mitigate all symptoms of fever (if such there are), adopt a cooling plan of treatment, with the assistance of bran water or pectoral decoction, especially if the lungs are much oppressed, or the approach of inflammation apprehended. The appetite must also be attended to, and solicited in every stage of the disease by comfortable mashies.

So soon as the predominant symptoms subside, Mr. Taplin recommends to proceed to a course of mild purging balls (see BALL), going regularly through three doses, at such periods as are best adapted to the strength of the horse. In a few days, after working off the last dose too, we are instructed to begin upon the following warm diuretics, well guarded with aromatics, giving one every morning till the whole are taken. These he calls *cordial diuretic balls*.

Take of Castile or pure white soap, ten ounces;

Nitre,

Rosin, of each six ounces;

Aniseeds, in powder, four ounces;

Camphor,

Ginger, in powder, of each one ounce;

Oil of juniper, six drachms.

Honey sufficient to form the mass; which divide into balls of two ounces each.

The author concludes by assuring us, that the above medicines and treatment are "singularly adapted to every purpose in the cure of this disease."

"The work begun by the alterative purges will be completed by the gradual effects of the diuretics; and, with proper attention to the rules laid down, the horse may be soon produced in good state and condition."

The foregoing account of this singular disease is conformable to that of Gibson, Bracken, Wood, and other veterans of the old school. Mr. John Lawrence also repeats their account of it, accords principally with their treatment, and asserts that he has "repeatedly seen it, though not in any very dangerous form;" nay, that when a boy he was the occasion of it in a horse encumbered with flesh and fat, having ridden him hard in hot weather. It is worthy of remark, however, that the latest veterinary writers have taken no notice of this disease, or at least have declined treating of it under the unscientific and vague appellation of *molten* (i. e. *melted*) grease. Chemical tests applied to this matter discharged from the intestines would readily decide the question as to its real nature; which, instead of *fat*, we rather suspect to be the *coagulable lymph* of the blood, transuded through the coats of the intestines, or else a redundancy of their natural mucus.

MOMENTUM, that progressive force which a body, impelled by another body, is disposed to exert. Thus we speak of the *momentum* of the blood and other fluids, urged through the vessels in which they are destined to flow.

MONSTER, in a medical sense, an animal production out of the common course of nature. This happens not uncommonly in the human, but is far more frequent in the brute, subject. In most cases there is a confused organisation or an unnatural union of two or more *fœtuses* with each other, in a grotesque manner. Thus calves, lambs, pigs, puppies, cats, and even smaller animals, as chickens, &c. are seen preserved in the museums of the curious, either

duplicated in their perfect forms, or exhibiting more legs, heads, toes, &c. than naturally belong to them. It generally happens in all these cases, that nature, as if ashamed of her own errors, cuts short the existence of these uncouth productions, so that few are found to arrive at maturity. Monsters generally occasion difficulty in parturition. See OBSTETRICS.

MONTOIR, or HORSE-BLOCK; in the manege, a word derived from Italy, where the riding-masters mount their horses from a stone as high as the stirrup, without putting their foot into the stirrup. In France, no such thing is now used; yet the word *montoir* is retained, and signifies the *poise* or rest of the horseman's left foot upon his left stirrup.

MOON-BLINDNESS, a disorder in the eyes of a horse, so denominated from its having been thought to increase or decrease, according to the course of the moon. See the article EYE.

This generally happens when a horse is turned five, coming six, at which time one eye becomes clouded, the eye-lids being swelled, and very often shut up; and a thin water generally runs from the diseased eye down the cheek, so sharp as sometimes to excoriate the skin. The veins of the temple, under the eye, and along the nose, are also turgid and full of blood, though sometimes it happens that the eye discharges but little.

Moon-blindness scarcely ever admits of a cure, as has been observed under the article already referred to. It generally takes place while the horse is young, and sometimes has been attributed to the pain in cutting their teeth.

The inflammation in this disorder comes and goes till the cataract is confirmed, and then all pain and running disappear, and the horse becomes totally blind, which is generally in about two years. During this time, some horses have more frequent returns than others, which continue in some a week or more; in others, three or four, returning once in two or three months; and they are seldom so long as five without a relapse.

There is another kind of moon-blindness, which is also the forerunner of cataracts, where no weeping of the eye attends. The eye is never shut up or closed here, but will now and then look thick and troubled; at which time the horse sees nothing distinctly. When the eyes appear sunk and perishing, the cataracts are longer in forming, and it is not unusual in this case for one eye to escape.

These cases generally end in blindness of one if not of both eyes: the most promising signs



of recovery are, when the attacks come more seldom, and their continuance grows shorter; and that they leave the cornea clear and transparent, and the globe plump and full.

If the eyes are large, swollen, and inflamed, the horse should be bled at proper intervals from the nearest vein, or in the neck: but where the eyes appear sunk and perishing, bleeding is often pernicious, and it is of more use to strengthen the constitution.

MOOR's HEAD, in the manege, implies the colour of a roan horse, who, besides the mixture or blending of a grey and a bay, has a black head and black extremities, as the mane and tail.

MORBID, (from *morbus*, a *disease*), a medical epithet, synonymous with the term *diseased*. Thus we speak of a morbid disposition of the animal fluids, morbid action, &c.

MORFOUNDER, a term from the French *morfondre*, which signifies cold upon heat; and which the old farriers retain, as Solleysell made use of it first to denote molten grease, or a foundering in the body of a horse that has been hard ridden and cooled too suddenly. See the article MOLTEN GREASE.

MORPHEW (*μορφαία*, from *μορφή*, *forma externa*), scurf. It is ranked as a species of leprosy, though differing from it in this, that the seat of the leprosy is in the flesh, but that of the morphew in the skin. The alphas is sometimes thus named. The brown itching morphew is named *hepatizon*.

MORTIFICATION (from *mors*, *death*, and *facio*, *to produce*). The Greek word *sphacelus*, called also *ignis frigidus*, is very ambiguous in its use among the ancients. Boerhaave says, that a gangrene is a beginning mortification. Mr. Pott observes, that a gangrene is in the cellular membrane and the skin; but that a sphacelus is deeper, attacking the muscles. When a mortification is in the bone, it is called a *caries*. Dr. Cullen considers the mortification not as a genus of disease, but as a mode of inflammation terminating; which he divides into gangrene and sphacelus. The first, he defines—after an inflammation the part becomes livid, soft, has little sensibility, and is often attended with ichorous vesicles. The second, after a gangrene, the part becomes black, flaccid, easily lacerating, without sensation or heat, and attended with the factor of putrid flesh; the malady quickly spreading; so that the latter is but an higher degree of the former.

Dr. Kirkland well observes, that it is very proper to distinguish betwixt local gangrenes inclining to spread, and gangrenes from a bad

habit; on which he observes as follows:—

“When the mortification arises simply from injury done to the limb, it is not preceded by a gangrene, but comes on in consequence of an absolute stagnation of the blood and juices alone; and accordingly the skin, and all the injured parts, become dead and putrid at the same time, without any previous emphysema. A mortification arising indeed from a weakness and deficiency of native heat comes on in the same manner, only more gradual, with the same appearances; but the state of the patient will easily lead to the nature of the disease. When external injury is the cause, if an incision is early made, the part is insensible, and no other than extravasated blood is discharged. In this kind of mortification the countenance is serene, nor does any other fever supervene, but such as is common to contused wounds; and, unless the affected part is very near the body, the disease slowly extends itself by the acrid fluids corroding the neighbouring parts in the manner of a caustic, till matter enough is absorbed to contaminate the whole mass of blood. But a stop may be always put to local sphacelus; for a mortification rarely arises merely from the injury done to the part, which would not give way to proper management.

“When a mortification arises from an internal cause, that is, from a gangrenous disposition of the juices soon after the injury is received, whether a large wound is made by external violence, or a small wound by protrusion of a broken bone, the lymph which stagnates about the wound immediately inflames and corrodes the vessels which contain it, when air-bubbles in the adipose and other membranes are instantly set at liberty; which air-bubbles, by increasing the inflammation, are increased, and extended immediately upon the smallest degree of obstruction taking place all over the limb, &c. an emphysema often first discovering the tragedy that is acting under the skin, not yet apparently diseased. A fever at this time frequently comes on, accompanied with a delirium, great dejection of spirits, and often a particular wildness in the looks; the pulse is either quick, low, weak, and fluttering, or quick, unequal, and hard, and the scene is frequently closed with a rapidity that will not admit of assistance. If an incision is made into the affected part, when the air-bubbles are first formed, it is sensible, and blood is discharged from the arteries, in a florid state, as free as usual: the adipose membrane is of a darkish yellow colour, and the muscles only appear browner than common. Afterwards the skin becomes inflated,



and the muscles, not yet having lost their shape, frequently force themselves out immediately upon making an incision, with a large discharge of wind, and a quantity of frothy matter: the blood in the vessels is now turned to a black coagulated mass; the adipose membrane, and the membranes in the interstices of the muscles and fibres, and the muscles themselves, putrify; and, lastly, the skin also becomes livid and putrid: from all which it is evident that a gangrene brings on a sphacelus, while the blood is yet circulating in the vessels."

The usual signs of a present gangrene are, the sudden removal of inflammation (when inflammation attends); the lessened sensation of the part, for the skin does not so speedily mortify as the cellular membrane; hence, till the skin is destroyed, there is a little feeling. A pale, cineritious, dark, livid, or black colour, which is always worse as it recedes from the pale to the black. Softness and flaccidity of the parts, so as to retain the impression made by the finger; pustules or blisters, full of lymphatic, yellowish, or reddish ichor; this is generally accounted the pathognomonic sign of a gangrene on the external part of the body.—When a gangrene is induced by cold, an itching, and a violent sense of puncture, together with intense redness, soon succeeded by blackness, indicate mortification: the cold produces first a paleness, which is succeeded by redness accompanied by a troublesome pungent pain, or an uneasy itching. Then the redness is increased to a purple colour, and afterwards the part becomes black.

The remote cause is, the reduction of the vital heat in the part to a certain degree below that which health requires.

The immediate causes are, violent inflammation, which, by the heat attending, so distends the cellular membrane as to compress the vessels, stop the circulation in the adjacent parts, and destroy the vital action there. The acrimony of the juices, by rupturing the vessels in an inflamed part, occasions an extravasation of blood, which, putrifying, produces a mortification. A contusion or wound of the spinal marrow, by preventing any further influx of the vital heat to the parts below where the injury is received, causes a mortification there. External compression, intense cold, compression from tumours internally, poisons, &c. produce the same effect.

These doctrines obtain no less in quadrupeds than in men, though the evidence in proof of them cannot, of course, be so complete.

The indications of cure are, to confirm the

strength, or to raise and maintain the vital heat a little above the natural healthy degree,—to prevent the absorption of the putrid matter into the veins. Against the progress of gangrene in the human subject, it is found, that cinchona (the *Peruvian bark*) is the only known specific, but yet its use is not to be indiscriminately admitted of in every case. In habits that are lax and feeble, no objections can occur to prohibit it; but in inflammatory habits, nitre, or mineral acids, should accompany it if given, and great caution is necessary before it is directed. If the inflammation is considerable, the mineral acids are more proper even than the bark. If the pulse is strong, large, and hard, and the extremities of the body are warm, the urine red and high coloured, the circulation is sufficiently strong, so need not be increased; but if the pulse is weak, and the symptoms indicate a defective vital heat, cordials will be necessary.

Mr. Pott observes, with his usual sagacity, that a mortification proceeds from a circulation that is too rapid, or too languid; that, in the first case, bleeding and diluters, and in the second, cordials and invigorating medicines, must be prescribed. When a mortification is from an internal cause, there is usually great pain, and opium is directed to be freely used. This should be done whether the cause is internal or external; in these cases opium is the greatest cordial known.

How far these remedies may be expected to succeed in the horse and other animals is yet to be ascertained. The power of *opium* on the horse has been denied, and even that of *bark* called in question.—May not the metallic salts be employed for the latter? It is to be observed, indeed, that though mortification very commonly terminates the diseases and lives of brutes, it is seldom thought worth while to make any attempts to arrest its progress. Perhaps it is because that progress is usually very rapid; perhaps from a well-founded suspicion of the sufficiency of our remedies. A right understanding of the nature of the disease we hope this article will supply, and it remains for the inquisitive veterinarian to render it useful to the objects of his care.

As topics, in cases of external mortification, *fermenting poultices* (see *POULTICE*) are the most suitable. These should be removed as often as they seem to have acquired a putrid smell, which will be in six or eight hours, while the disorder is in its progress; but when it abates, the dressings may continue proportionably longer. We may also foment with a proper antiseptic fo-



mentation (see FOMENTATION) made warm; and, after fomenting for some time, apply the warm antiseptic cataplasm. If emollients are mixed with antiseptics, they assist in separating the putrid parts, and stopping the further progress of the mortification.

When the eschar or mortified part begins to separate, remove no more at each dressing than comes away without pain or loss of blood; but dress with DIGESTIVES.

**MORTUUM CAPUT.** See **CAPUT MORTUUM.**

**MOTION**, in the manege. A horse is said to have a pretty motion when he moves and bends his fore-legs with great ease and freedom upon the manege. But if a horse trots right out, and keeps his body straight and his head high, and bends his fore-legs handsomely, then to say he has a pretty motion implies the liberty of the action of the fore-hand. See the articles **ACTION**, **PROGRESSION**, &c.

**MOTORII**, or **MOTORES OCULORUM.** The third pair of nerves which pass to the eyes is thus called, from their influence upon its motions. The *motores oculorum externi* are the sixth pair of nerves that go out from the head.

**MOULTING**, a periodical change of plumage in birds. This term is very appropriately used by Mr. Clark, of Edinburgh, to denote that natural process by which horses and other quadrupeds cast their hair. We shall follow that judicious writer in our remarks on this subject.

Horses, towards the end of autumn and beginning of winter, exhibit signs of some particular change about to take place in their constitutions; and this, at the same time, is attended with a degree of faintness or weakness mostly observed at that season. This, our author supposes, may arise from a variety of causes combined together; but the principal one, he apprehends, may proceed from that of moulting; for, although horses in general do not cast their hair at this season as they do in the spring, yet, as a considerable change takes place in its thickness and length at this period, it may properly be called their moulting season. "Horses of all colours," says Buffon, "like most animals covered with hair, moult or cast their hair every year, commonly in the spring, and sometimes in the autumn. As they are then *weaker* than at any other period, they require more care, and should be more plentifully fed." The diseases that prevail at this period, in horses, are noticed by Mr. Clark in the following way:—

"As those horses," says he, "that are kept in warm stables, and well fed through the win-

ter, are hearty and vigorous in the spring, when the season is gradually turning milder and warmer, their moulting at this season is *not* attended with that faintness, &c. to which they are liable on their moulting towards the end of autumn." The reason of this the author attributes to the food of horses, which in the spring is dry, producing richer and better nourishment; also to the change of the season which then takes place, and which is more agreeable to their constitutions. Towards the end of autumn, he observes, it is very different with the generality of horses, and especially with those that have been fed with new hay, new grain, or late grass, and, at the same time, have undergone severe labour. Such kind of food, abounding too much with watery juices, produces less nourishment, and causes a general laxity of the muscular fibres of the whole body; and hence arises the increased languor and weakness so generally prevalent during the time of moulting.

"It is observed," continues the author, "that horses kept in warm stables, and well fed, moult early in the spring; those that run abroad at grass moult much later. But if the former should be exposed to cold winds or rain for any length of time together, by being turned out to pasture, or otherwise exposed to cold weather, after they have once cast their winter coat, it appears that their hair will then grow thicker and longer, the same as it does in the beginning of winter, and continue so till the season grows milder, or that they are kept in warm stables: in this case, such horses may be said to have moulted twice in the spring."

The cold and moisture of the weather, at this season, in Britain, are likewise adduced as a farther cause, contributing to increase this indisposition by occasioning a constriction of the pores of the skin; for, at this period, the hair of the generality of horses *stares*, whilst, at the same time, the skin is commonly dry and hard, or the animal is what is called *hide-bound*. They sweat, indeed, most profusely when put to any hard work, merely through weakness and relaxation; yet that natural insensible perspiration, which produces a shining and smooth appearance on the coat, seems to be almost suspended. Under such circumstances, they are disposed, upon any irregular management, to fall into diseases of various kinds. From the general constriction of their pores, that fluid which ought to pass off by insensible perspiration is retained; hence, the quantity of fluids in the vessels being increased, whilst the muscular fibres through the whole

system are relaxed, a deranged state of the circulation takes place, and hence proceed swellings of the legs, greasy heels, &c., so common at this season of the year.

On the other hand, horses that have had the early spring-grafs, and are afterwards kept on hay, with a good allowance of grain, and daily accustomed to moderate exercises, suffer no material injury from moulting in the autumn, further than their being more liable to catch cold at this time, from the alternate changes they are exposed to, before their coats of hair have grown sufficiently thick to resist the cold.

Robust horses, at grafs through the summer, if exposed to active exercises, are liable to many diseases about the time of moulting, as the interval from the time they are taken from grafs, and the moulting, is too short to admit of their bodies being prepared to perform these exercises with safety to themselves. Hence they fall into that languor, &c. peculiar to this season; and, if left in the stable too much at rest, their gross habit of body disposes them to fever, disorders of the lungs, swelling of the legs and glands about the throat and jaws, and running sores, &c. nor are they able to undergo common exercises, without being jaded.

Horses that run at grafs through the summer and autumn, are still in a worse situation. These are not only more liable to the foregoing diseases, from their very lax habit of body, but are less fit for active exercises of any kind, and require a longer time to be brought into a proper state. This period, in particular, proves critical with them, and, indeed, they generally fall victims to disease if too much worked.

It happens too, that, in the situation above mentioned, the *means* required to render horses fit for active exercises, and to carry off the appearance of swelling of the legs, &c., are evacuations of every kind, such as bleeding, purging, diuretics, &c. At the same time, these methods are sometimes hurried on with a degree of haste that would even affect a sound horse, of the most hardy habit of body, at any season, and reduce him to great weakness. The moulting now comes on, which still adds to it. In these circumstances, the constitution receives too great a shock to be resisted; and hence many horses fall a sacrifice to this treatment, or, if they survive, they are attacked with some chronic disorder, which renders them useless to their owners.

"The end of autumn," says Mr. Clark, "likewise proves very severe on those horses whose flesh and strength are exhausted from continued

hard labour, or violent exercises, as posting, &c. through the summer and autumn; when the moulting comes on in this low, spiritless state of body, it carries off great numbers of them, that by proper care in moderating their labour, together with good nursing, and feeding them with rich boiled food at this time, their lives might be preserved. Such soft nourishing food becomes the more necessary for horses of this description at this particular period, in order to support them under the moulting, as the serous or watery parts of their fluids having been drained off by the violent perspiration they were exposed to, their muscular fibres are then too rigid, and the blood too thick, for circulating so freely as it ought to do through the fine capillary vessels; hence they are disposed to fall into those disorders which proceed from this cause.

"Many of those horses that are thought to be worn out from posting, &c. at the end of autumn, when they come to be fed with boiled food, or with potatoes or carrots, and continued so through the winter, recover surprisingly. This last-mentioned food recovers their flesh; it renews their fluids in general, and promotes all the natural secretions: it operates on them nearly in the same manner as the spring-grafs; it purges them gently on the first use of it, and corrects the whole habit. On changing their food to that which is hard and dry, as oats and beans, and increasing their exercise gradually towards the spring, they soon become fit for the most active exercises, without any previous preparation from medicine, &c.

"This season likewise proves destructive to aged horses: when the green food is exhausted, they are then obliged to feed on hard dry food; in some, the digestive powers may not only be weaker, but the teeth, at the same time, may be defective, in not breaking down the hard food so minutely as it ought to be, in order to render it fit for digestion, and the nourishment of the body."

After illustrating this by a case in point, Mr. Clark proceeds to observe, that "As the disorders which commonly prevail at this time amongst horses, proceed in a great measure from catching cold, together with the sickness attending the moulting, horses are differently affected, according to circumstances of habit of body, and the treatment they may be exposed to; some are affected with colds in the head, attended with inflammation and swelling of the glands about the throat and jaws, which too frequently, from want of proper care, termi-



nate in the glanders; hence this disorder is frequent at this season. Some horses are affected with coughs, and other disorders of the lungs. Rheumatism is likewise common in different parts of the body, particularly in the neck, which is called the *chords*. Epidemical diseases frequently originate at this period, and continue with more or less violence through the winter, and sometimes till towards the spring. Fever is likewise common, together with a variety of other complaints, which would be tedious to mention. All these disorders are forwarded from the above circumstances, together with horses breathing a heated foul air in their stables, and their bodies exposed suddenly to the chillness of the weather, before their coats of hair have grown sufficiently thick to resist the cold, &c. for it is observed in those horses who run abroad in the fields day and night, that they moult much sooner in the season; by which means they are sufficiently guarded against the severity of the weather when it becomes cold and damp; neither is it observed that they are so liable to be affected with those epidemical diseases which prevail amongst horses that are kept in too warm stables. This sickly disposition amongst them continues with more or less violence till such time as the weather turns more favourable and dry, or that the frost sets in. It commonly commences, if the weather is moist, cold, and damp, about the middle of October, and continues till towards the middle of December: after which, if it is favourable, horses generally turn more lively and vigorous, and acquire their usual spirit, and healthy appearance, &c."

From what has been said, it may be observed, that as horses are generally more weakly at the time of moulting towards the end of autumn than at any other season, their labour, when circumstances will admit, should be moderate. "Their feeding should be increased in order to strengthen and support them during this period. It ought likewise to be of the very best quality, as old hay, old grain, that is, of the preceding year's growth; and if the grain that is given them was broken down in a mill, it would prove more nourishing than in any other way it could be given them. New hay, or new grain of the same year's produce, ought to be avoided, as it is extremely hurtful to horses, that must undergo severe labour, or active exercises, of which we have formerly taken notice. Good rubbing and frequent dressing are likewise of great benefit.

"All evacuations, such as bleeding, purging, rowels, &c., ought to be administered with caution, as such prescriptions contribute greatly to increase that natural weakness, &c., formerly mentioned, which prevails in the constitution of horses at this period. At the same time it is to be understood, that horses are not by any means to stand too much at rest in the stable. Fresh air, with moderate exercise, when the weather will permit, being absolutely necessary to promote their health; neither is the proper use of the above prescriptions to be neglected when they are thought necessary, and prescribed with judgment. All the precautions formerly mentioned, with respect to their stables, ought to be attended to, that they are kept clean, well ventilated, and yet moderately warm. Body-cloths, however necessary they may be thought for keeping their coats of hair fine, smooth, and clean in the stable, ought to be dispensed with. As horses cannot with propriety be ridden with them, they must therefore be stripped the moment they are to go abroad, even although they should happen to be in a strong perspiration at the time; by which means they are liable to catch cold, &c. And surely the health of a horse is of much more consideration to his proprietor than the looks or appearance of his coat of hair, especially when it is considered, that good rubbing and frequent dressing will produce the same effect on the appearance of the hair. At the same time that this operation will in a great measure prevent the consequences above mentioned, of rendering horses so very liable to catch cold."

One single rug Mr. Clark thinks a sufficient covering for a horse whilst in the stable; and that more clothing than this may prove hurtful.

**MOURAILLE**, an instrument, commonly of iron, composed of two branches joined at one end with a hinge, for the use of farriers, who take hold of a horse's nose with it, and keep it tight, by bringing to, or almost closing the other end of the branches, and tying them with a strap. This they do to prevent a horse from struggling, when they make any incision upon him, or give the fire. Some mourailles are made of wood, with a screw; and this sort is indeed very good. See the article **BARNACLES**.

**MOURNING OF THE CHINE**, a senseless name given by the old farriers to that discharge of matter, which is yellow or greenish, or tinged with blood; and which, when horses have been long glandered (see **GLANDERS**), and

the bones become foul, exhibits a blackish colour, and becomes foetid. The name arose from a notion that this was a consumption of the *spinal marrow*, which runs through the *vertebrae of the neck*, back, loins, &c. Solleyfell, Blundeville, and others, wrote about the mourning of the chine.

**MOUTH.** In most quadrupeds, as in man, this part is divided, or made up of the lips, the gums, the palate, the uvula, and the surrounding glands. The lips are made up of several muscles; their use is to shut the mouth, and to articulate the voice. The palate or roof of the mouth is covered with a pretty thick membrane, which is continued to the tonsils: upon it there are a great number of little glands, whose excretory ducts, piercing it like a sieve, discharge a liquor for the moistening and dissolving the aliments. It is an error to think the palate tastes; for, by it, it is impossible to distinguish the most acrid substances. The uvula, in man, is a reduplicate of the internal membrane of the mouth; its substance is very lax, and it has a number of such glands as in the palate; it is somewhat long, of a conic figure; it hangs from the roof of the mouth, at the extremity of the passage which comes from the nose, above the larynx, between the tonsils. It is moved by two pair of muscles, the *pterygo-staphilin* *externus*, and the *pterygo-staphilin* *internus*.

The glands, which are the sources of the spittle, that discharges itself into the mouth, are in great number; of which the principal are the parotides, one on each side, situated under the ear, above the masseter muscle. They are of the conglomerate sort, being made up of a great number of smaller glands, each of which sends out a small excretory duct, and they all unite and form one channel, called *ductus salivaris superior*; which, running over the cheek, pierces the buccinator, and opens in the mouth. When the masseter acts in mastication, it presses the saliva into the mouth. The maxillares, which are situate with the under jaw, one on each side, are also of a conglomerate sort; the excretory pipes of their small glands unite, and form two ducts, which both together open under the tip of the tongue, on the inside of the dentes incisivi, where they have each a small papilla at their orifice; when the muscles of the tongue or lower jaw act, they compress these glands. The sublinguals, are one on each side of the tongue; they have sometimes two excretory ducts, as the former, formed by the union of that of each small gland; they run on each side of the tongue, near its tip, where they open into the mouth, just by the former,

with which sometimes they join. Sometimes these are wanting, and then each little gland has a duct, which opens under the tongue: when the mylo-hyoideus acts, it compresses them. The tonsillæ, or almonds, are two round glands placed on the sides of the basis of the tongue, under the common membrane of the fauces, with which they are covered; each of them hath a large oval sinus, which opens into the fauces, and in it there are a great number of lesser ones, which discharge, through the great sinus, a mucous and slippery matter, into the fauces, larynx, and œsophagus, for the moistening and lubricating those parts. When the muscles of the œsophagus act, they compress the tonsillæ. Besides these, there are a great number of little glands spread upon the cheeks and lips, called *glandulae buccales* and *labiales*, whose excretory channels open into the mouth, and all of them separate a saliva or spittle, which conduces to the dissolution of the aliments. The tongue is connected in the mouth to the os hyoides, and to the larynx, by a membranous ligament, which is in the middle of its lower side. Sometimes this ligament is continued to the tip of the tongue, and then it may chance to hinder the young animal from sucking. See TONGUE.

**MOUTH**, in the manege. The external parts of the mouth are the lips, the beard, the end of the nose, being a continuation of the upper lip, and the chin. The internal parts are the bars, the tongue, the channel, the palate, and the teeth.

The mouth of a horse should be moderate in size; for when it is too wide, we find much difficulty to bit a horse, so as that he may not "*swallow it*," as the term is: and, if he has a little mouth, it will be difficult to get the mouth of the bit rightly fixed in it.

To have a good mouth, he should have a well-raised neck; and if it be somewhat large and thick, it ought to be at least well turned. But if his jaw-bones be too close, and he have also a short and thick neck, so that he cannot place his head right, his having a good mouth will avail but little.

The compliance and obedience of a horse is owing, partly, to the tender or quick sense of his mouth, which makes him afraid of being hurt by the bit; and partly by his natural disposition and inclination to obey. The mouth is called sensible, fine, tender, light, &c. Some horses have so fine a mouth, that they stop if the horseman does but bend his body behind, and raise his hand, without staying for the pull or check of the bridle.



1. A mouth is said to be *fixed* and certain, when a horse does not chack or beat upon the hand. See BEAT.

2. A *false* mouth, is a mouth that is not at all sensible, though the parts lock well, and are all well formed.

3. A mouth of a full *appui*, or rest upon the hand, is one that has not the tender nice sense of some fine mouths, but nevertheless has a fixed and certain rest, and suffers a hand that is a little hard, without chacking or beating upon the hand, without bearing down or resisting the bit, insomuch that he will bear a jerk of the bridle without being much moved.

For the army, provide a horse with a mouth that bears a full rest upon the hand; for, if you take one of a tender mouth, and another horse run against him in a fight, he will be apt to rise upon his hind-feet, which a horse of a harder mouth would not do.

4. A mouth that bears more than a full rest upon the hand, implies a horse that does not obey but with great difficulty. You will readily stop such a horse, for his mouth is above a full appui upon the hand. See APPUI.

MUCILAGE, MUCAGO, or MUCILAGO, a glairy fluid, procured chiefly from the vegetable gums; as the mucilage of gum arabic, of gum tragacanth, &c. Some of the animal secretions have also the name of mucilage.

MUCILAGINOUS GLANDS. These are very numerous in the joints, and first taken notice of to any purpose by Havers, in his Osteology. He says, there are two sorts; some are small, and in a manner miliary glands, being glandules placed all upon the same surface of the membranes which lie over the articulations. The other sort are conglomerated, or many glandules collected or planted one upon another, so as to make a bulk, and appear conspicuously; and these are considerable glands. In some of the joints there are several of them; in others there is a single gland. As for the structure of these large glands, they consist of small vesicles, which are not gathered together into several lobes, or bags of glandules, but are disposed upon several membranes lying over one another, of which membranes there are several in every one of these glands, which appear evidently in anatomical subjects. They have their blood-vessels as other glands, but their veins have a particular texture in their course, for retarding the return of the blood from the glands, that the mucilaginous liquor, which is not separated with the greatest expedition, may have time to be separated, as is the contrivance wherever a

thick fluid is to be secreted. See SECRETION. The large mucilaginous glands are variously situated: some in a sinus formed in the joint; others are near, or over against the interstice, between the articulated bones; but, in general, they are so placed, as to be squeezed gently, and lightly pressed in the inflexion or extension of the joint, so as to separate a quantity of mucilage proportionate to the motion of the part, and the present occasion, without any injury. The design of all those glands is to separate a mucilaginous kind of liquor, that serves principally to lubricate the joints, to make them slippery. It serves likewise to preserve the ends of the articulated bones from attrition and wearing. But all this it does in conjunction with the medullary oil (which see), with which together is made a composition admirably well fitted for those ends; for the mucilage adds to the lubricity of the oil, and the oil preserves the mucilage from growing too thick and viscous. The author observed the same glands to lie between the muscles and tendons, and supposes that there is the same mixture of an oily and mucilaginous substance: the one being that fat which is found between the muscles, and supplied by the glandulæ adiposæ; and the other being separated by the mucilaginous glandules, of which the common membrane of the muscles is every-where full. This mixture in the interstices of the muscles lubricates them and their tendons, and preserves them from growing rigid.

MUCILAGINOUS LIGAMENTS, i. e. capsular ligaments. See the latter.

MUCOUS GLANDS, the glands discovered by Cowper in the penis, commonly called Cowper's glands.

MUCOUS LIGAMENT, a part betwixt the nature of a ligament and a cartilage, and full of glairy matter. It is situated betwixt each of the vertebræ, and admits them to recede from, or approach nearer to, each other.

MUCOUS BAGS. See BURSE MUCOSÆ.

MUCUS (from the Arabic *muk*, or from the Hebrew term *makak*); called also *myxa*; *myxarra*; *myxas*. By it is usually understood that viscid fluid which is secreted in the membrana pituitaria, and discharged from the nose spontaneously. But mucus is a covering for the surfaces of all the membranes in the body that are exposed to any extraneous matter; such as the skin, internal membrane of the mouth, nose, lungs, œsophagus, stomach, intestines, urinary passages, &c. It is a compound of coagulable matter and water. It defends the membranes from being too much stimulated by what is

applied to them. It is colourless, insipid, inodorous, and incapable of stimulating; but if its secretion is suddenly increased, instead of a simple mucus, it becomes a watery kind of fluid, containing the salts of the blood, and, in consequence of them, is capable of stimulating, loses its quality of defending the membranes from acrimony, and further, its colour often is changed to a whitish or a greenish yellow, and now and then it acquires a smell, and puts on, in some respects, the appearance of pus. See Pus.

**MUGWORT**, the *artemisia vulgaris*, Lin. This plant grows plentifully in fields, hedges, and waste places, throughout England; and flowers in June. In appearance, it somewhat resembles the common wormwood: the difference most obvious to the eye is in the flowers, those of wormwood hanging downwards, while the flowers of mugwort stand erect. The leaves of this plant have a light aromatic smell, and an herbaceous bitterish taste. They are principally used, in veterinary practice, with other herbs, in fomentations.

**MULE**, a mongrel kind of quadruped, usually generated between an ass and a mare, and sometimes between a horse and a she-ass. The mule is a sort of monster of a middle nature between its parents, and therefore incapable of propagating its species; so careful is nature to avoid filling the world with monsters.

Mules are chiefly used in countries where there are rocky and stony ways, as about the Alps and Pyrenées, &c. Great numbers of them are kept in these places: they are usually black, and are strong, well-limbed, and large, being mostly bred out of the fine Spanish mares. The mules are sometimes fifteen or sixteen hands high, and the best of them are worth forty or fifty pounds a-piece. No creatures are so proper for large burdens, and none so sure footed. They are much stronger for draught than our horses, and are often as thick-set as our dray-horses, and will travel several months together, with six or eight hundred weight upon their backs. It is a wonder that these creatures are not more propagated in England, as they are so much harder and stronger than horses, and are less subject to diseases, and will live and work to twice the age of a horse. Those that are bred in cold countries are more hardy and fit for labour than those bred in hot; and those which are light made are fitter for riding than horses, as to the walk and trot; but they are apt to gallop rough; though these do it much less than the short-made ones.

They take so much after the mares they are bred from, that they may be procured of any kind, light or strong, as the owner pleases. The general complaint we make against them, is, that they kick, and are stubborn: but this is only owing to our neglect in the breeding them, for they are as gentle as our horses, in countries where they are bred with more care.

Mules are of two kinds; the one between the horse and the she-ass, the other between the he-ass and the mare. The first sort are the least valuable. They are commonly very dull, and take after the ass, and are not large; the other breed is therefore what is propagated chiefly in all countries where mules are used. The largest and finest he-ass must be procured for this breed; and in Spain, where mules are greatly esteemed, they will give fifty or sixty pounds for a fine he-ass, only to be kept as a stallion. They breed with this creature out of the finest and largest mares they have, giving the ass an advantage of height of ground, and putting the mare into a narrow pit, railed on each side. Some authors affirm, that in Syria there are a sort of mules which propagate their species; but this is a mistake; for in all the countries where they are common of both kinds, no such thing ever happens. If the ass designed to be bred on is suckled by a mare, or the mare suckled with an ass, it makes them much more familiar than they would otherwise be; and this may always be done by taking away the colt that belongs to the dam, and putting the other in its place, keeping them in the dark ten days or a fortnight.

**MULES, IN THE LEGS OF A HORSE.** See KIBED HEELS.

**MULTIFIDI SPINÆ**, spinal muscles. See Plate XI. and description of muscles "in the trunk," under the article HORSE.

Anatomists have described the *multifidus* to lie under the spinalis. It rises from the roots of the transverse processes, and runs to the roots of the spinal processes; it is commonly called *transversalis*; and is distinguished into the *transversalis colli dorsi*, and *lumborum*. The *transversalis lumborum* is also called *sacer*.

**MULTIPEDS**, *multipedes*; such reptiles or animals as have more feet than four.

**MUNDIFICATIVES**, a name given by the old surgeons to such topical remedies as were calculated to act as cleansers, detergents, or purifiers of wounds or ulcers.

**MUNDIFICATION** (from *mundus*, clean, and *facio*, to make), signifies the cleansing any



wound or body, as from dross, or matter of a noxious kind.

MURIATES, are salts formed by the union of the muriatic acid, with the different alkaline, earthy, and metallic bases: there are thirty-eight species enumerated in M. Fourcroy's Elements of Natural History and Chemistry. *Muriates oxygenated*, are combinations of the oxygenated muriatic acid with potash, and soda: there are two species enumerated by Fourcroy.

MURIATIC, whatsoever partakes of the taste or nature of brine; from *muria*, brine, or pickle. The basis of such matters consists of the *muriatic acid*. See ACID.

MUSCLE. This is called *μῦς*, by the Greeks (which word properly signifies a mouse), and that perhaps from the likeness that some muscles have to a mouse when stript of its skin; but others derive it from *μῦειν*, *contrahere*, which is the proper action of a muscle.

A muscle is a bundle of thin and parallel plates of fleshy threads or fibres, inclosed by one common membrane. All the fibres of the same plate are parallel to one another, and tied together at extremely little distances by short and transverse fibres. The fleshy fibres are composed of other smaller fibres, inclosed likewise by a common membrane. The two ends of each muscle, or the extremities of the fibres, are, in the limbs of animals, fastened to two bones, the one moveable, the other fixed; and therefore, when the muscles contract, they draw the moveable bone according to the direction of their fibres. When the muscles contract in length, they swell in thickness, as may be perceived by laying the hand upon the masticator, a muscle of the lower jaw, and pressing the grinders together: but this power of contracting or swelling is lost, when the nerve of the muscle is cut or tied; and therefore some conclude, that the contraction, swelling, or motion of the muscles is performed by the influx of the nervous liquid or animal spirits. The illustrious Baron Haller has demonstrated that the arteries contribute nothing to muscular motion, but so far as they nourish and preserve the natural state of the parts; as to the peculiar manner in which the nerves occasion muscular motion, it is so obscure, that we may almost despair of ever being able to explain it. This is the opinion of the same Baron Haller, the most accurate anatomist and intelligent physiologist of the age. We shall insert what he says upon the subject in his *Primæ Linæ Physiologia*, which may serve at the same time as a refutation of those elaborate hypotheses which

some writers have obtruded on the world for real knowledge.

The direct manner, says he, by which the nerves excite motion in the muscles, is so obscure, that we may almost despair of ever being able to ascertain it. As to the nervous vesicles swelling by a quicker influx of the nervous spirits, it is inconsistent with anatomical truth, which demonstrates the least visible fibres to be cylindrical, and in no part vesicular, and is likewise repugnant to the celerity with which muscular motion is performed, and with the bulk of a muscle being rather diminished than increased during its action. Again, the inflation of the rhomboidal chains in the fibres is equally repugnant, both to that celerity and to the evidence of anatomy. Finally, it is by no means demonstrable, that the fibres, from so few nerves, can be so numerous, or distributed in so many different transverse directions, with respect to the muscular fibres, as those hypotheses require to be allowed. The notion of nerves woven round the arterial fibres, so as to contract them with their elasticity, is founded upon a false structure of those fibres, supposing nerves to be distributed, where filaments of the cellular substance only can be traced. Moreover, instances of animals, which, having neither brain nor spinal marrow, are, nevertheless, very apt for motion, shew, that muscles may be so constructed, as to act without any nerves at all. Other explanations, derived from sphericles full of air in the blood, suppose a false nature of that fluid, namely, a repletion of it with elastic air, of which it has none.

This only we are certain of, that the nerves act not by their mechanical contraction, which is extremely weak, but by the power of an influent liquid, detached, or some way actuated, with great celerity. That muscle, therefore, will be contracted, to which more nervous fluid arrives in a given time, whether that be from any impulse of the will, or other cause residing in the brain, or else from the power of some stimulus in the nerve itself. Now whether the nervous liquid only increases the irritable nature, or else augments barely the inherent corrugating force of the constituent parts in the moving fibre, after a manner unknown to us, we see, in either case, that the consequence is the shortening of the fibre or muscle. More than this Haller could not discover. The same muscle is again relaxed, when this additional celerity in the motion of the nervous fluid is abated, and sends it only in such a quantity as will make an equilibrium.

The effect of motion in the muscles is a contraction or shortening of them, by drawing their tendons almost quiescent each way, towards their middle or fleshy belly, as to the centre of motion; by which means the bones and other parts, in which the tendons are inserted, are brought together in the same manner, as when a muscle out of the body contracts or draws its two extremities towards the middle part or belly. But if one of these extremities be less moveable or more fixed, then that which is more moveable approaches towards that which is more fixed in a proportion inversely as their mobility. If one end be immoveable, then the other, which is moveable, is alone brought towards it; and, in this sense only, the distinction of origin and insertion is allowable; otherwise, without this limitation, it may be frequently the cause of error.

The strength of this action in the muscles is very considerable in all persons, but more especially in those who are phrenetic, and some strong men; since frequently, with the use of a few muscles only, they will easily raise a weight greater than that of the whole human body itself. Notwithstanding this, we see, that a much greater part of the force or power, exerted by a muscle, is always lost without producing any visible effect. For all the muscles are inserted nearer the point or centre of motion than the weights they are applied to, and therefore their action is weaker, in the same proportion, as they move a shorter part of the lever, than that to which the weight is applied. Moreover, in most of the bones, especially those of the limbs, the muscles are inserted at very acute angles; whence again the effect which a muscle exerts in action, is proportionably less as the sine of the angle, intercepted betwixt the bone and the muscle, is less than the whole sine. Again, the middle part of the muscular force is lost, because it may be reckoned as a cord extended, and drawing an opposite weight to its fixed point. Again, many of the muscles are seated in the angles of the two bones, from one of which arising, they move the other; and therefore that bone being moved, they are bent, and of course, like an inflected cord, require a new force to extend them. Many of them pass over certain joints, each of which they bend in some degree, whereby a less part of their remaining force goes to bend the joint to which they are particularly destined. Even the fleshy fibres of the muscles frequently intercept angles with the tendon, in which they terminate; from whence a great part of their force is lost, as much as is equal to the differ-

ence or deviation betwixt the sine of the angle of their insertion and their whole sine. Finally, the muscles move their opposed weights with the greatest velocity and expedition, so as not only to overcome the equilibrium, but likewise to add a considerable celerity to the weight.

All these losses of power being computed, make it evident, that the force exerted by muscles in their contraction, is exceedingly great, beyond any mechanical ratio or proportion whatever; since the effect is scarcely  $\frac{1}{100}$ th of the whole force exerted by the muscle, and yet a small number of those muscles, weighing but a few pounds, are able not only to raise some thousands of pounds, but also with a considerable celerity. Nor is this to be reputed any defect of wisdom in the Creator; for all those losses of power were necessary towards a just symmetry or proportion of the parts, with the various motions and celerities required by the muscles to act in different directions; all which have no share in the composition of engines mechanically. But we may, however, conclude from hence, that the action of the nervous or animal fluid is very powerful, since in an engine so small, it can exert a force equal to some thousand pounds for a considerable time, or even for many days together; nor does this seem to be otherwise explainable than by the incredible celerity, by which the influx of this fluid obeys the command of the will. But how, or from whence, it acquires such a velocity, is not in our power to say; it is sufficient, that we know the laws of its motion are such, that a given action of the will produces a new and determinate celerity in the nervous fluid or juice.

The easy and sudden relaxations of muscles in their motion, are assisted by the actions of their antagonist muscles; for in all parts of the body every muscle is counterpoised by some weights, elasticity, and opposite muscles, or a fluid acting against the cavity of a muscle, by which it is expelled. This opposite cause, whichever it be, continually operates as long as the muscle acts, and, so soon as the additional celerity, derived from the brain, abates, it restores the limb or other part immediately to its former easy state, in which there is an equilibrium betwixt the muscle and its opposing cause. Whenever the antagonist power is removed from the muscle, there are none of them but must contract, extending their opposites, by which the distended nerves excite an uneasy sense, and cause a stronger endeavour towards recovering the equilibrium. Hence one of the flexor muscles, being cut in two, the extensor



contracts or operates even in a dead body, and the reverse.

But there are other means by which the motions of the muscles are rendered more safe, certain, and easy. The large long muscles by which the greater motions of flexure are performed, being included in a strong tendinous capsule, drawn and tightened by other muscles, are thus secured and strengthened; so that the muscle remains pressed against the bone in a state of contraction, while the limb is bent without any considerable diminution of its power. But the long tendons, which are incurvated or extended over joints in their motion, are received and confined by peculiar bands, which retain them within their slippery channels, and keep them from starting out under the skin, and thus causing severe pain and loss of motion. The muscles which are perforated perform the same kind of office in other parts. Sometimes the tendons are either carried round certain eminences of the bone, in order that they may be inserted at greater angles into the bone which they move, or else they are inserted into another bone; from whence a different tendon descends under a larger angle into the bone to be moved. In other parts, nature has contrived that the muscles, which are derived from convenient situations, have their tendons carried round in a contrary direction, so that they pass into the part to be moved, as it were round a pulley. Nature has likewise surrounded the muscles on all sides with fat, which is spread also betwixt their bundles of fibres, and the small fibres themselves which lie contiguous together; which fat being pressed out by the turgescence of the muscles and the fibres, renders them soft, flexible, slippery, and fit for motion.

Moreover, the power and action of one muscle is determined by the co-operations and oppositions of others, which serve either to hold firm some part, from whence the muscle arises, or to bend it together with the muscle, or else to change its action from the perpendicular to the diagonal, by concurring to assist its force at the same time. Therefore the action of no one muscle can be understood from considering it alone, but all the others must likewise be brought into consideration, which are either inserted into the muscle itself, or into any of the parts to which the said muscle adheres.

By these muscles, variously assisting and opposing each other, are performed walking, standing, flexion, extension, deglutition, and all other offices of the several parts in the living

body. But the action of the muscle contributes also to a more general use. They hasten the return of the venal blood, by pressing it out from the veins, both of the muscles themselves, as well as of the veins which lie betwixt them; for the blood in these vessels distributed betwixt the turgid bundles of a contracted muscle, is by the valves determined towards the heart only: they likewise return the fat to the blood, shake, grind, or densify the arterial blood, and return it quicker to the lungs. Again, in the liver, mesentery, womb, &c. they promote the course of the contained blood, bile, and other juices, so as to lessen the danger of their situation: they serve also to increase the strength of the stomach, by adding their own strength to it, whereby digestion is promoted, inasmuch that all sedentary and inactive courses of life are contrary to nature, and pave the way to diseases, from a stagnation of the humours, or from a corruption or crudity of the aliments. But by too much exercise or action the muscles themselves grow hard and tendinous on all sides, render the parts, upon which they are incumbent, cartilaginous, or else change those which are membranous into a bony nature; at the same time they increase the roughness, protuberances, and processes of the bones, flatten their sides which lie next to them, and dilate the cells seated in the diploe or spongy heads of the bones themselves towards their stronger action.

The muscles are commonly distinguished into those which naturally are at rest, and are put into action by an inclination of the will; such as operate spontaneously, and can neither be excited nor retarded by the will, as in the heart and intestines; and those which are subservient to a mixed power, as they act by a spontaneous motion, and are likewise governable by the will at the same time, as in the muscles of respiration. There have been various causes assigned for this difference; but this question Baron Haller had discussed in a former section on RESPIRATION.

As far as we know, this doctrine of the muscles admits of a general application, at least to all the larger quadrupeds. As relating to the horse, therefore, it is only necessary to resort to accounts of different muscles under the alphabetical arrangement, to the plates of the muscles of the horse, annexed to the articles ANATOMY, EXTERIOR, HORSE, &c. and to Plates XVII. XVIII. &c. to XXII. of which the following descriptions are given by Mr. STUBBS.

Plate XVII. exhibits a view of the muscles, fascias, ligaments, nerves, arteries, veins, glands, and cartilages, of a horse, viewed in front.

Muscles of the Horse.







*In the Head.*

*a b* The glandulous membrane of the inside of the lips; *a* glandulæ labiales; *b* glandulæ buccales.

*c* The concha narium inferior, covered by the pituitary membrane.

*d e f g* The four recti muscles, or musculi recti of the eye; of which *d* is called attollens, *e* deprimens, *f* adducens, and *g* abducens: these muscles arise from the bottom of the orbit near the foramen opticum, in the elongation of the dura-mater, by short narrow tendons, in the same order as they are inserted into the tunica sclerotica, near and at the edge of the cornea lucida; the flat tendons, before they reach the cornea lucida, join and form the tunica albuginea, or white of the eye.

*h* Obliquus inferior.

*i* Musculus septimus oculi suspensorius, arises from the margin of the foramen opticum, and is inserted (being divided into several fleshy portions) into the posterior part of the sclerotica, below the terminations of the musculi recti.

*k* Arteria angularis.

*l* Vena angularis.

*m* The middle portion of the cartilage of the nose: it is a broad cartilaginous lamina, joined by a kind of symphysis to the anterior edge of the middle lamina of the os ethmoides, to the anterior edge of the vomer, and to the anterior part of the groove formed by the ossa maxillaria, as far as the nasal spines of these bones: this lamina completes the septum narium, of which it forms the principal part.

*n o* The part *o* is but a continuation of the part *n*, which, both together, form the lateral cartilage of the nose: they are continuations of the middle cartilages.

*p q r* Nervi maxillares superiores; they are branches of the third branch of the fifth pair; *p* branches which go to the upper lip; *q* a branch which goes to the inside of the nostril towards the tip of the nose; *r* a branch which goes to the long nasal muscle of the upper lip.

*s* The anterior cartilage of the outer ear.

*t* The outer ear.

*In the Neck and Trunk.*

*a b* Inter-vertebrales; they arise from the ascending processes, and form the space between the oblique processes of the uppermost vertebrae of the back: they are inserted into the lateral part of the body of the vertebra above its origin.

*c c*, &c. *d d*, &c. The multifidus of the spine; *c c* the origins from the upper part of the transverse processes of the vertebrae of the back, and

from the oblique ascending processes of the loins, and sacrum; *d d*, &c. the insertions into the spinal processes of the sacrum, loins, and back.

*e* The elevating muscle of the tail, beginning its origin from the inferior or posterior edge of the third spinal process of the os sacrum, which origin is continued from near the end of the spine, about half way towards its root: its origin is continued fleshy from the sides and edges, and interspinal ligaments of the spines of the sacrum, below that from the whole length of the last of them, and is inserted into the first and second oblique processes of the os coccygis by two tendons; it then begins to arise from the spinal processes of the coccyx, and after passing over one, or two, is inserted into the next, or next but one below that: this seems to be a continuation of the multifidus of the spine.

*f g h* The lateral muscles of the tail or coccyx: *f g* the tendon by which it arises, at *f*, from this spine of the lowest vertebra but one of the loins; *h* the fleshy part: it is inserted tendinous into the oblique process of the coccyx or tail, and into two or three below that, and then joins in with the elevating muscle of the tail.

*i* The inter-transverse muscles of the tail, arising from the transverse process of one vertebra of the coccyx or tail, and inserted into that of the next, and so on through the whole length of the tail.

There are muscles which arise from the upper or posterior part of the transverse processes, and are inserted into the oblique processes of the next but one or two below them; they are like the inter-transversales posteriores of the neck.

*k* The depressing muscle of the tail, which begins its origin from under the transverse process of the third vertebra of the sacrum, and continues it from the whole length of the transverse processes of the sacrum below that, and from the inter-transverse ligaments, and so on down the tail almost to the last, and is inserted into the bodies of the bones of the tail.

*l l*, &c. The elevators of the ribs.

*m* Arteria cervicalis.

*n* The vertebral vein and artery of the neck.

*o* Arteria carotis communis.

*p* The trunk of the eighth pair of nerves.

*q* Part of the jugular vein.

*r* Arteria mammaria interna.

*In the Shoulders and upper Limbs.*

1 2 3 4 Sub-scapularis; it arises from all that space of the inner or concave side of the



scapula, between the insertion of the serratus major anticus, and near its neck: from this situation it has its name: it is thick and fleshy, made up of several penniform portions; 1 the part above the superior costa of the scapula, which is externally tendinous; 2 marks a tendinous slip sent from this muscle, which leaves it about 5, and is inserted into the processus coracoides; some nerves and blood-vessels pass under it: this muscle is inserted, at 4 4, into the head of the os humeri.

- 5 Nervus musculo-cutaneus.
- 6 Nervus medianus.
- 7 Nervus cubitalis.
- 8 Nervus radialis.
- 9 Nervus axillaris.
- 10 Arteria axillaris.
- 11 Vena axillaris.
- 12 Arteria brachialis, or the humeral artery.
- 13 Vena cephalica.
- 14 Vena plantaris.
- 16 16 Ligaments which bind together the bones of the carpus.
- 17 17, &c. Articular ligaments.
- 18 18 Cartilages belonging to the coffin bone.

*In the lower Limbs.*

*a a* Iliacus internus; *a a* part of its origin which is continued from all, or most of the inside of, the os ilium, which lies before the transverse processes of the loins and sacrum, and has some origin from the posterior part of the anterior spine of the ilium, and that part of the fascia lata which lies betwixt it and the glutei: it joins in with the psoas magnus from its origin, and is, with it, inserted into the little trochanter of the thigh bone.

- b* Interosseus, &c.
- c* Vena tibialis anterior.
- d* Vena saphena.
- e e* Vena plantaris externa and vena plantaris interna.
- f* A ligament which runs from the astragalus to the metatarsal bone.
- g g*, &c. Articular ligaments.
- h* The outer semi-lunar cartilage in the joint of the knee.
- i i* Cartilages belonging to the coffin bone.

*Explanation of Plate XVIII, exhibiting the muscles, &c. of a horse, viewed posteriorly.*

*In the Head.*

- A* The outer ear.
- a b* Muscles running from the anterior cartilage to the external ear.
- 1 2* Retrahens; the posterior part *1* arises under the part *2*, and is inserted into the ear

near the inferior muscle of the outer ear, or the depressor; the part *2* arises from the ligamentum colli and occiput, and is inserted into the convex part of the outer ear.

*c* The superior lateral muscle of the outer ear, which arises under the lateral muscle of the anterior cartilage, and is inserted into the inferior angles of the openings of the ears anteriorly.

*d* The lateral muscle of the anterior cartilage of the outer ear, which arises from above the orbit of the eye, and is inserted into the anterior cartilage.

*3* The inferior lateral muscle or depressor of the outer ear: it arises from the quadratus colli, and is inserted close by the lower angle of the opening of the ear posteriorly.

*e* The orbicular muscle of the eye-lids, which arises from the ligament by which the conjunction of the eye-lids, in the great canthus, is tied to the nasal part of the os unguis.

*4 4 5 6* Part of the latissimus colli, inserted about *5* into the lower jaw; at *6* the parotid gland protuberates under the latissimus colli.

*f* The globe, or ball of the eye.

*g h* Depressors of the lower lip, chiefly covered by the quadratus colli.

*iii* The orbicular muscle of the mouth.

*k* The elevators of the chin, where they are inserted into the skin, the fibres of which are intermixed with the fat of the chin.

*l* Caninus, or the elevator of the corner of the mouth.

*m* Zygomaticus; its origin is from the orbicularis of the eye; and its insertion into the orbicularis of the mouth.

*n* The lateral dilators of the nostril and upper lip.

*o* The digastrick muscle of the lower jaw; the quadratus colli covers this part, and immediately under it the mylo-hyoidæus lies.

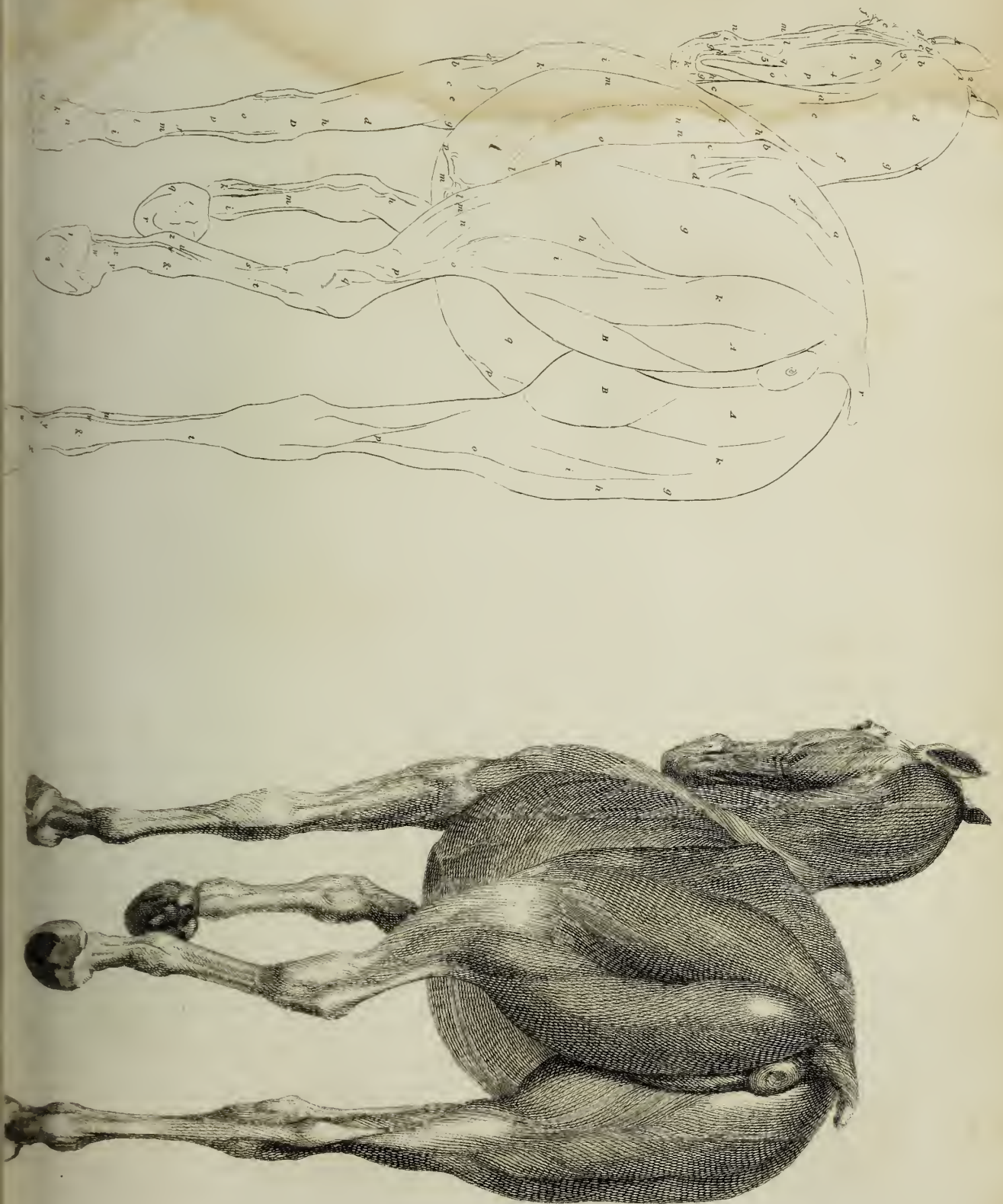
*p* The inferior maxillary glands.

*q* Vena angularis, a branch of the external jugular vein.

*In the Neck, Shoulders, and Trunk.*

*a b c* Levator humeri proprius; *a* the portion which arises, under the part *b*, from the transverse processes of the four uppermost vertebrae of the neck; *b* the part which arises from the processus mastoideus, tendinous, and by a tendinous membrane from the poll bone or ridge of the occiput: these two heads unite before they pass over the head of the humerus, and are inserted into that bone along with the transverse or superior part of the pectoralis, between the biceps and brachialis internus: the first part

Muscles of the Horse.







hath the same origin as the angularis, called levator scapulæ proprius in the human body; the second has its origin much like the anterior and superior part of the trapezius, which in the human body is inserted into the clavicle, but the clavicle being wanting in a horse it is inserted into the humerus, and the angularis into it.

*d e f* The superior part of the trapezius, under which at *d*, the splenius protuberates; at *e* the serratus major anticus; at *f* the rhomboides.—To this muscle the part, as above, called levator humeri, which arises from the bones of the head, belongs.

*g* The mane.

*h i k l m n n o p q* Membrana carnosæ; *h* the inferior part of the trapezius lying under the membranous part of this fleshy pannicle; *i* the superior fleshy part; *k* a membranous part; *l m* the posterior fleshy part, which begins at *l*; *n n o q* the posterior membranous part lies over the obliquus descendens, linea alba abdominis, and part of the serratus major posterior; *p* a large vein, which is spread in the fleshy part of this pannicle. It is attached to the upper edge of the superior part of the pectoralis, and the lower edge of the inferior part; so that they, together, surround the whole limb from the top of the shoulder to the bottom of the fore-feet: its lower part goes with the lower part of the pectoralis to be inserted into the humerus, and its upper part with the upper part of the pectoralis down the fore limb: it may be called the most external part of the pectoralis, or fleshy membrane; and that part of the pectoralis, marked *f f g g* in table the seventh, may be called the external part of the pectoralis; the part marked *d d e e* the middle; and the part marked *b* the internal part: the internal part is inserted at the top of the humerus, the middle part as low as the bottom, and into the fascia of the coraco radialis; and the external part runs, with part of this fleshy membrane, down the fore limb.

*r* The tail.

#### *In the upper or anterior Extremities.*

*a b c d e f g h i k l m n* The membranous continuation of the fleshy pannicle down the upper limbs, with the muscles, &c. protuberating under it; *a* extensor carpi radialis; *b* extensor digitorum communis; *c d* D flexor carpi ulnaris; *e* the external head, from the external protuberance of the os humeri posteriorly; *d* the internal head, arising from the internal protuberance of the os humeri; D the tendon; *e* the third described head, in table the third, of the

profundus; *g* The middle part of the pectoralis, which sends a membranous expansion down this limb along with the expansion of the membrana carnosæ; *i* a sort of spongy fatty substance, probably a production of the membrana adiposæ, lying over the protuberating part of this joint to preserve the bending tendons from bruises when this part touches the ground, &c.

*k* The internal and external vena plantaris; *k l* the external branch from the basilica.

*m n* The tendons of the sublimis and profundus muscles.

*o p* Ligamentous fibres which come from the inside of the radius, and are inserted into the external metacarpal bone; they protuberate at *o* and join in with the carnosous membrane about *p*.

*q r* The horny part of the hoof; *q* the superior part; *r* the sole or inferior part lying under the coffin bone.

#### *In the lower or posterior Limbs.*

*A B a b c d e f g h i k l m n o p q r s t u v w x y z* The membranous continuation of the fleshy pannicle down the inferior, lower, or posterior limbs, with the musculus fasciæ latæ; the fascia lata, and other expansions of the muscles, with the muscles, &c. protuberating under them: A the large adductor of the thigh; B gracilis; *a* the gluteus medius lying under the carnosous membrane, and continuation of the tendon of the latissimus dorsi; *b* the origin of the musculus fasciæ latæ from the spine of the ilium; *c* the anterior fleshy part; *d* the posterior fleshy part; *e* the tendinous surface into which the carnosous fibres of the fleshy bellies *c* and *d* are inserted internally; *f* the gluteus externus protuberating a little; *g h i* the biceps cruris, or biceps tibia; *g* the anterior part; *h* the middle part; *i* the posterior part; *k* the semi-tendinosus; K the patella; *l* the extensor longus digitorum pedis; *m* peroneus; *n* flexor digitorum pedis; *o* gemellus; *p* tendons formed by these fasciæ and expansions to join in with the extensors of the tarsus: about *p* and *q* there are seen branches of veins which terminate the saphæna minor in cutaneous ramifications; *q* nerves expanded upon these fasciæ, or sent off to the external parts (as the adipose membrane and cutis); they are branches of the sciatic nerve; *r* a sort of tendon formed by these fasciæ, which may probably assist the extensor digitorum when the tarsus is extended; *t* the tendons of the flexors; *u* the interosseus, &c. *v w* veins arising from under the hoof, which are branches of the vena tibialis posterior, from which the saphæna is derived; they



are called *venæ plantares*; *x* a large nerve, called the external plantaris; *y* *nervus plantaris internus*; at *z* these fasciæ have an attachment to the tendons and ligaments as they pass over them; & *a* sort of spongy fatty substance, probably a production of the *membrana adiposa*, lying over the protuberating part of this joint to preserve the bending tendons from bruises, when it touches the ground, &c.

*1 2* The horny part of the hoof; *1* the superior part; *2* the sole or inferior part lying under the coffin bone.

*Explanation of Plate XIX, exhibiting the muscles, &c. of a horse, viewed posteriorly.*

*In the Head.*

*a* The lateral dilator of the nostril.

*bb* *Musculi canini*.

*c d d e* The orbicular muscle of the mouth.

*f g b* The depressor of the lower lip; it arises along with the buccinator, and is almost divided into two muscles, one superior the other inferior, for the passage of nerves and blood-vessels to the lower lip; *f* the superior part, which arises tendinous, and is inserted fleshy into the lower lip laterally; *g b* the inferior part, which arises fleshy, and is inserted tendinous into the lower lip near the middle; *g* the fleshy belly; *b* the tendon.

*i* Buccinator.

*k* The masseter.

*l* Mylo-hyoideus; it arises from the lower jaw near the sockets of the dentes molares, and something more anteriorly, and is inserted into the os hyoides.

*m m* The parotid gland.

*n* The inferior maxillary gland.

*o* Branches of the *nervus maxillaris inferior*: they are branches of the third branch of the fifth pair of nerves: and accompanied with an artery from the temporal artery, which communicates with the *arteria angularis*.

*p* *Arteria angularis*.

*q* *Vena angularis*.

*r* The salivary duct.

*st* *Vena temporalis*.

*u* The outer ear.

*In the Neck.*

*a b c d* Coraco-hyoideus coming, at *a*, from its origin at the upper and internal side of the humerus, betwixt the insertions of the sub-scapularis and *teres major* by a flat membranous tendon: it begins to be fleshy at *a* as it comes from under the *ferratus minor anticus*; *c* its insertion into the os hyoides: it has a strong attachment to the anterior part of the levator

humeri or trapezius, near the whole length of its fleshy part, and the upper part marked *d* in table the third is attached to the *rectus anticus longus*, or *internus major capitis*, or it arises from the os sphenoides, by a flat tendon, close to the insertion of that muscle.

*e* Sterno-hyoideus; it arises from the middle tendon of the sterno-thyroideus, and goes to be inserted into the os hyoides along with the coraco-hyoideus.

*f g* Sterno-mastoideus, or sterno-maxillaris; it arises from the top of the sternum, and is inserted, tendinous, into the lower jaw bone; at *f* its tendon protuberates under the parotid gland; it is also inserted, by a continuation of the same flat tendon, into the root of the *processus mastoideus*.

*h h* *Rectus internus major capitis*.

*i i* *Inter-transversales minores colli*; they run from the transverse process of one vertebra to the transverse process of the next to it.

*k* The tendon of the trachelo-mastoideus.

*l m n o p* *Splenius*; *l* the part coming from the origin of this muscle, which is from the expansion, common to it and the *ferratus minor posticus*, &c. it arises tendinous from the *ligamentum colli*, under the *rhomboides*, and fleshy about the superior part of the neck; at *m* it is attached to the tendon of the trachelo-mastoideus, at *n* to the *transversalis*: it is likewise inserted into the fifth, fourth, and third transverse processes of the vertebræ of the neck by flat strong tendons, which run on the internal side of the muscle: *p* the part which goes to be inserted into the occiput.

*q q r s* *Rhomboides*; *q q* its origin from the *ligamentum colli*; *q r* its origin from the superior spines of the vertebræ of the back; *s* the part going to be inserted into the scapula.

*t* *Ligamentum colli*.

*u v x y z* *Serratus major anticus*; *u v x y* its origination from the third, fourth, fifth, and sixth transverse processes of the vertebræ of the neck; *z* that part which is inserted into the external part of the scapula.

*1* *Vena jugularis communis*.

*2* *Vena jugularis externa anterior*.

*3* *Vena jugularis externa posterior*, or superior.

*4* Arteries coming out of the splenius to go to the trapezius and integuments.

*5* Arteries accompanied with branches of the cervical nerves, which go to the levator humeri proprius and integuments.

*In the Shoulder and Trunk.*

*a b c d* *Infra-spinatus scapulæ*; *b* its origin







from the dorsum scapulæ, and the cartilage on the border of that bone; *c* its strong tendon, by which it is inserted into the protuberating part of the humerus, under the tendinous expansion which goes from the teres minor to the lesser anterior saw muscle; *d* a part of the carious insertion of this muscle below that protuberating part of the os humeri.

*effg* *h* Teres minor; at *ff* it sends off a fascia, which connects it to the serratus minor anticus; from *f* to *b* it is inserted into the humerus, and at *g* into the fascia which runs over the extending muscles on the cubit.

*ik* Latissimus dorsi; *i* the part which lies upon the ribs; *k* the part which runs over the inferior angle of the scapula.

*IK* Triceps brachii; *I* the part called extensor longus; *K* extensor brevis.

*L* Part of the pectoralis, which sends an expansion down the inside of the cubit.

*llmmnnopp* Obliquus externus abdominis; *llmm* the part which arises from the ribs and intercostals; *mmnn* the fleshy part which runs over the ribs and intercostals; *o* the fleshy part lying over the abdomen; *pp* the strong broad aponeurosis of this muscle.

*q* The elevating muscle of the tail, beginning its origin from the inferior or posterior edge of the third spinal process of the os sacrum, which origin is continued from near the end of the spine about half way towards its root, being fleshy from the sides and edges, and internal ligaments of the spines of the sacrum, and below that from the whole length of the last of them. It is inserted into the first and second oblique processes of the os coccygis by two tendons; it then begins to arise from the spinal processes of the coccygis, and after passing over one or two tendons, is inserted into the next or next but one below that, and so on to the end of the tail.

*r* The lateral muscle of the tail, or os coccygis; it arises tendinous from the spine of the last vertebra but one of the loins, which tendon is marked *eee* in Plate XI. and the fleshy part *f*; it is inserted tendinous into the oblique process of the third vertebra of the tail, and also into two, or three, below that, and then joins in with the elevating muscle of the tail.

*s* The inter-transverse muscles of the tail, arising from the transverse process of one bone of the tail, and inserted into that of the next, and so on through the whole length of the tail.—There are muscles which arise from the upper or posterior part of the transverse processes, and are inserted into the oblique processes of the next but one or two below.

*t* The depressing muscle of the tail, beginning its origin from under the transverse process of the third vertebra of the sacrum, and continuing it from the whole length of the transverse processes of the os sacrum below that, and from the inter-transverse ligaments, and so on down the tail: it is inserted into the bodies of the bones of the tail.

*uu* Sphincter externus ani.

*vv* Acceleratores penis.

*In the upper Limbs.*

*aa* The extensor digitorum communis, protuberating under the fascia which covers the extending muscles on the cubit.

*ABCDGbcddeffg* An expansion which arises from the articular ligament *A*, and from the olecranon *C*: it receives an addition from the longus minor, and internal protuberance of the humerus and expansion of the biceps muscle, or coraco-radialis, then descends over the bending muscles of the cubit down to the ligaments on the carpus, to which it is attached as well as to the bones of the cubit on each side of the bounds of the bending muscles; *ff* its attachment to the continuation of the ulna, or ligament from the ulna, which runs down towards the carpus, or to the radius near them; it has a strong attachment to the os pisiforme, or orbiculare betwixt *d* and *f*, and another betwixt the tendons of the flexor carpi ulnaris *de*; betwixt *f* and *f* it appears like a number of small tendons; there lies protuberating under it at *D* the tendon of the muscle, which is analogous to the extensor minimi digiti in the human body: at *Bbcdd* the flexor carpi ulnaris; *Bb* the external head arising by the tendon *B* from the external protuberance of the os humeri posteriorly; *c* the internal head arising from the internal protuberance of the os humeri; *Gdde* the tendon which divides into two a little below *G*, and is inserted, by the part *dd*, into the splint bone; and by the part *e* into the os pisiforme or orbiculare; *g* the third described head in Plate III. of the profundus, of which *bb* is the tendon.

*E* The tendon of a muscle which is analogous to the extensor of the thumb in the human body.

*bb* The tendon of the profundus.

*ikk* The tendon of the sublimis going to be inserted, near *kk* (where it divides for the passage of the profundus), into the great pattern, or bone of the first order of the finger.

*ll* Nervus plantaris externus and nervus plantaris internus.

*L* Vena cephalica; it falls into the jugular vein.



*mm* Vena plantaris externa and vena plantaris interna.

*op* The external articular ligament.

*qr* The internal articular ligament.

*st* A ligament which runs from the os orbiculare to the radius, and external articular ligament over the tendon *dd* of the flexor carpi ulnaris.

*uw* A ligament running from the orbicular bone of the carpus to the false metacarpal bone: it serves as a stay to that bone when the flexor carpi ulnaris is in action: there is a large vein protuberating under it which is a branch of the vena cephalica.

*uxy* A ligament which binds down the tendons of the sublimis and profundus running from the orbicular bone of the carpus to the articular ligament, &c. to the upper part of which the expansion of the bending muscles on the cubit makes a considerable addition: the part *ux* runs from the orbicular bone to the internal false metacarpal bone, and serves as a stay to it when the flexor carpi ulnaris is in action.

*z* A ligament which helps to bind down the tendon of the sublimis and profundus: it is fixed to the splint bones on each side: it is a continuation of the expansion which covers the bending muscles on the cubit.

*1* A ligament inserted into the sesamoid bones, running over the tendons of the sublimis and profundus, which serves to prevent the tendons from starting from those bones when the joint is bent.

*2* A ligament arising from the upper part of the great pastern on each side the tendons of the sublimis and profundus: it is attached to the tendon of the sublimis about *2*, and serves, as well as the ligament *1*, to confine the bending tendons to the bone when the joint is bent.

*3* A ligament which binds the tendon of the profundus to the coronary bone when it is in action.

*4 4 5 5* The interosseus: it is like a strong ligament arising from the bones of the carpus and upper part of the metacarpal bones: it is inserted into the sesamoid bones, and great pastern on each side, and sends off the ligaments *5 5* to the tendon of the extensor digitorum communis, which it keeps from starting when the joint is in motion.

*6* A substance resembling the villous surface of a mushroom.

*In the lower Limbs.*

*aaa bcd* Gluteus externus: *b* a fleshy origin

from a ligament which runs betwixt the spinal, and transverse processes of the os sacrum; *bd* the place where the fascia lata is cut off from the production, which it sends under this muscle, or from its attachment to the tendinous surface of the internal part of this muscle arising from the ligament which runs betwixt the os sacrum and ischium, and receives first the insertion of those fleshy fibres which arise betwixt it and the ends of the spinal processes of the os sacrum from the same ligament, and then the fibres *aaa*, which arise from the fascia lata, and descend obliquely inwards and downwards to be inserted into it: *c* the place where this muscle ceases to arise from the fascia lata, and goes to be inserted into the lateral protuberance of the thigh bone: it sends off a fascia over the posterior part of the thigh bone, which runs in a transverse direction, and into which the pyramidalis is inserted, or joined in with before its insertion into the superior and posterior part of this protuberance.

*efffg* Gluteus medius; *e* the part which arises from the tendinous surface of the sacrolumbalis, and does not adhere to the fascia lata; *fff* the part which receives fleshy fibres from the fascia lata; *g* its origin from the ilium: it goes under the gluteus externus to be inserted into the great trochanter.

*bik Llll m n n o o p* Musculus fascia lata; *b* its origin from the ilium; *i* its anterior fleshy belly; *L* the posterior fleshy belly, over which the fascia lata sends a strong membrane, as well as under; so that it is received or contained in a duplicature of the fascia lata; the fibres *Llll m* arising from the superior or external fascia and descending to be inserted into the inferior; the part *bik* arises from the spine of the os ilium internally tendinous: fleshy fibres arising from that flat internal tendon, and descending to be inserted chiefly into the inside of the fascia; *kloo* the fleshy part in the superior angle; *l* being thickest, it gradually diminishes till it is lost in the line *oo*; the dark colour of the fleshy fibres make some appearance through the fascia in this angle, though it is very thick, but not near so much as the part *bio*, because the covering of that is only (or little more than) a common membrane; the line *bm* marks the place where the fascia lata is cut off before it passes betwixt this muscle and the gluteus externus, to be inserted into the anterior costa of the os ilium; *lm* marks the place where the production of the fascia lata, which is sent over this muscle, is cut off; and *lll* the place where it joins to the broad tendon of this muscle, in which place it is cut off; *nn* marks the

place where the fascia lata ceases to adhere to the broad tendon of this muscle, in order to pass down over the leg and foot; at *p* the tendinous surface of the rectus cruris makes its appearance through the tendon of this muscle. This muscle is inserted by a strong tendon into the upper and anterior part of the tibia, adhering to the tendon of the anterior, and middle part of the biceps muscle all the way from the patella to its insertion into the tibia.

OPP The large adductor of the thigh; PP the place where the fascia lata is cut off, which confines this part of the muscle in its place.

*qrrsstuwxyz* 1 2 3 4 4 5 6 7 8 9 10 11 12 13 Biceps cruris; *qrr* mark the superior, or anterior head where it arises by carnosous fibres, from the fascia lata: its principal origin is from the ligaments which run from the spinal processes to the transverse processes of the os sacrum, and from thence to the tubercle of the ischium: *ssstuw* mark the inferior or posterior head, where it arises by carnosous fibres from the fascia lata: its principal origin is from the tubercle of the ischium, beginning at the extremity of that tubercle from the inferior angle, and continuing its origin, by a flat strong tendon, about six minutes along the inferior edge of that bone; this tendon is continued down from the tubercle towards *su* betwixt *t* and *w*, from which, a little above *t*, the fleshy fibres *ssstz* 1 4 4 begin to arise; but the fleshy part *uwz* 2 4 5 begins its origin from the tubercle, and continues it down the said tendon; *rry* the fleshy part of the anterior head where it does not arise from the fascia lata; *z* the tendon by which it is inserted into the patella, and superior and anterior part of the tibia; the part *ury* lies under a fascia sent from the anterior part of the posterior head to the tendon of the musculus fasciæ latæ; *x* 1 2 4 4 5 the fleshy part of the posterior head, where it does not arise from the fascia lata; 7 3 4 4 5 6 8 9 10 11 12 13 the tendon of the posterior head, which joins the tendon of the anterior head near the patella, and is likewise inserted into the anterior part of the tibia all the way down to the ligament common to the extensor longus digitorum pedis, and tibialis anticus, and into part of the upper edge of that ligament; 5 6 is the strongest part of this tendon; it joins with a production of the fascia lata, and is inserted into the os calcis; there lie protuberating under this tendon, at 9, the extensor longus digitorum pedis, at 10 the peroneus, at 11 the flexor digitorum pedis, at 12 the soleus, and at 13 the gemellus.

14 15 15 16 17 Semi-tendinosus; 14 its origin from the ligament running from the spinal to the transverse processes of the os sacrum, and from thence to the ischium; 14 15 15 mark the part where it receives carnosous fibres from the fascia lata; 15 15 16 the fleshy part where it does not arise from the fascia lata; 17 the tendinous production which wraps over the gemellus to join in with the fascia lata, and tendon of the biceps cruris: it sends off an expansion which is attached to the tendinous ligament which lies over the gemellus, and covers some blood-vessels and nerves which pass over the gemellus and run down the leg, and are marked 14 in Plate II. at the heel: it is also inserted by a flat tendon, or expansion, into the plantaris near the bottom of the fleshy part; through which expansion there is an opening for the passage of a large nerve: its principal insertion is by a flat tendon into the superior and anterior part of the tibia internally, marked *k* on the left lower limb in Plate II.

18 19 19 20 The gracilis: 19 19 the part coming from its origin, which is from the edge of the inferior branch of the os pubis near the symphysis by a broad and very short tendon, from thence the fleshy fibres run down to the internal condyle of the os femoris, where they terminate in a thin tendon, which afterwards degenerates into a kind of aponeurosis, and is inserted into the fore part of the inside of the head of the tibia; and from thence it is continued almost to the bottom of that bone, and the posterior part is attached to the tendinous surface of the flexor digitorum pedis.

21 7 8 A part of the fascia lata, &c. which is left remaining, the rest being cut away before its attachment to the tendons of the biceps, and semi-tendinosus: they cover the tendon of the gemellus, and are inserted into the inner side of the os calcis with a tendinous production of the plantaris: these fasciæ are inserted into the edges of the principal tendon of the plantaris, but most strongly into the external edge: the fasciæ, along with the tendinous production of the plantaris, being united, divide into two almost equal parts (or if they are continued into each other it is by what is membranous;) the external is inserted into the external edge of the plantaris as it passes over the calcaneum: the internal portion partly into the said tendon opposite to the other, but chiefly into the internal side of the calcaneum close to the origin of the aponeurosis plantaris.

22 23 24 25 26 The tendon of the plantaris



coming from under the tendons of the fasciæ and twisting over the tendon of the gemellus at 22; at 26 it divides for the passage of the tendon of the flexor digitorum pedis. The part 22 23 belongs to that part which is analogous to the plantaris in the human body, and inserted into the heel; and the part 23 24 25 26 is analogous to the short flexor of the toes arising from the heel or protuberance of the calcaneum, but in a horse they are continued one into the other.

27 The tendon of the flexor digitorum pedis of which 11 is the fleshy portion, lying partly under the broad tendon of the biceps cruris.

28 29 The tendon of the peroneus, of which 10 is the fleshy part lying under the broad tendon of the biceps cruris.

30 The tendon of the extensor longus digitorum pedis; of which 9 is the fleshy part lying under the broad tendon of the biceps cruris.

40 Extensor brevis digitorum pedis.

41 42 Tibialis posticus; 41 its fleshy belly lying under the flat tendons of the sartorius and gracilis; 42 the tendon going to join in with the tendon of the flexor digitorum pedis.

43 Popliteus, lying under the tendons of the sartorius and gracilis.

44 Some of the fleshy part of the flexor digitorum pedis, of which 27 is the tendon.

45 Nerves which make some appearance under the tendon of the biceps cruris, going to the tibialis anticus, &c.; they are branches of the small sciatic ramus, or sciaticus externus, called likewise sciatic-peronæus.

46 The external nervus plantaris.

47 The internal nervus plantaris.

48 Arteria plantaris externa.

49 Vena plantaris externa.

50 Vena plantaris interna.

51 A ligament which runs from the tibia to the os calcis; it lies over the tendon of the peroneus.

52 52 The external articular ligament, which is inserted above into the tibia and below into the astragalus, and os calcis.

53 A ligament which binds together the bones of the tarsus and metatarsus inserted externally above into the os calcis, and below into the splint or external imperfect metatarsal bone.

54 A burfal ligament.

55 A strong ligament which binds the os calcis to the astragalus, os naviculare, ossa cuneiformia, and splint or imperfect metatarsal bone, marked 8 9 9 in Plate II.

56 56 57 57 The interosseus, &c. it is like

a strong ligament arising from the upper part of the metatarsal bones, and some of the tarsal bones, and is inserted into the sesamoid bones, and first bone of the toe; on each side it sends off the ligaments 57 57 to the tendon of the extensor digitorum pedis.

58 A ligament lying over the tendon of the plantaris: it is inserted into the sesamoid bones on each side of the tendon, to which bones it closely confines the tendon when this joint is bent, but is not attached to it.

59 A ligament arising from the first bone of the toe on each side, and inserted into the middle of the tendon of the plantaris, to which bone it confines the tendon, when this joint is bent.

60 A ligament which binds the tendon of the flexor digitorum pedis down to the second bone of the toe when this joint is bent.

61 A substance resembling the villous surface of a mushroom, arising from the coffin bone, received by the like substance arising from the hoof, which it mutually receives.

*Explanation of Plate XX. exhibiting the muscles, &c. of a horse, viewed posteriorly.*

*In the Head.*

*a* Glandulæ labiales.

*bb* Musculus caninus.

*cc* Buccinator.

*def* The depressor of the lower lip: it arises along with the buccinator, and is almost divided into two muscles, one superior the other inferior, for the passage of nerves and blood-vessels to the lower lip; *d* the superior part which arises tendinous, and is inserted fleshy into the lower lip laterally; *ef* the inferior part which arises fleshy and is inserted tendinous into the lower lip near the middle: *e* the fleshy belly; *f* the tendon.—The part *d* is the depressor of the corner of the mouth, and the part *ef* the depressor of the lower lip, but the part *d* is covered by the blood-vessels and nerves which go to the chin.

*gggb* The orbicular muscle of the mouth.

*ii* The elevators of the chin.

*k* The eye-ball.

*ll* Musculus ciliaris.

*m* Masseter.

*n* Branches of the nervus maxillaris inferior: they are branches of the third branch of the fifth pair of nerves, and are accompanied with an artery from the temporal artery, which communicates with the arteria angularis.

*oo* Arteria angularis.

*p* Vena angularis.

# Muscles of the Horse.







- q* The salivary duct.  
*rs* Vena temporalis.  
*t* The outer ear.

*In the Neck.*

*ab* Coraco-hyoideus, coming at *a* from its origin, at the upper and internal side of the humerus, betwixt the insertions of the sub-scapularis and teres major, by a flat membranous tendon: it begins to be fleshy as it comes from under the serratus minor anticus: *b* its insertion into the os hyoides: it is attached to the anterior part of the trapezius near its whole length, and above that attachment to the rectus major capitis anterior; or has an origin along with the insertion of that muscle from the os sphenoides by a flat tendon.

*c* Sterno-hyoideus: it arises from the middle tendon of the sterno-thyroideus, and is inserted into the os hyoides along with the coraco-hyoideus.

*d* 5 Genio-hyoideus; 5 its origin from the lower jaw, tendinous.—Its insertion into the os hyoides is near *d*.

6 6 7 Diaphragmus; 7 the middle tendon; 6 6 its two insertions into the lower jaw.

*ee* Obliquus capitis inferior, covered by the fascia by which the complexus is attached to the transverse processes of the first and second vertebrae of the neck: it arises from all the length of the spine of the oblique process of the second vertebra of the neck, and from all the posterior part of that vertebra which the intervertebralis does not cover, and is inserted into all or most of the anterior part of the broad transverse process of the atlas, which the intervertebralis does not cover.

*f* Rectus internus major capitis, or rectus anticus longus: it arises from the transverse processes of the third and fourth vertebrae of the neck, and from a part of the longus colli: it is inserted into the os sphenoides.

*g h i k l m n o o o* Transversalis cervicis; *g h* the superior part, which arises from the oblique processes of the third, fourth, fifth, sixth, and seventh vertebrae of the neck, and two of the uppermost of the back, viz. the beginning of the lower oblique process of the third, and uppermost of the fourth, and so of the rest: it is inserted into the transverse process of the first vertebra of the neck; *i k l m n* the inferior part; it arises from the transverse processes of eight of the superior vertebrae of the back, and from the fascia betwixt that and the broad tendon of the complexus, &c. by fleshy fibres: at *k l m n* it is inserted into the transverse processes of the four inferior vertebrae of the neck, partly fleshy,

but chiefly by broad thin tendons; at *ooo* the inter-transversalis makes some appearance.

*p q* Trachelo-mastoidæus, complexus minor, or mastoidæus lateralis; *p* the fleshy part: it arises from the oblique processes of the third, fourth, fifth, sixth, and seventh vertebrae of the neck; the uppermost of the back, and the transverse processes of the second and third vertebrae of the back; *q* the tendon going to be inserted into the root of the processus mastoidæus.

*R r s s t t u v w x* Complexus; it is attached by a fascia to the transverse processes of the first and second vertebrae of the neck. It arises from the oblique processes of the third vertebra of the neck, and from all those of the neck below that, and from the upper oblique process of the first vertebra of the back, and by a pretty strong, flat tendon from the second and third vertebrae of the back, from the last of which the tendon is reflected to the spinal process of the same vertebra, which makes a communication betwixt this part of the muscle and that arising from the spines of the third, fourth, fifth, sixth, and seventh vertebrae of the back: *r* fleshy fibres arising from the broad tendon; at *R* it arises tendinous from the ligamentum colli; *s s t t* tendinous lines, by which the fleshy fibres are intersected, which advance towards the tendon *u*; *w* the part which is inserted, by a strong round tendon, into the occiput near its fellow; at *x* are marked the directions of some tendinous threads which attach it to the ligamentum colli.

*y z* Ligamentum colli; *z* the place where the rhomboides and the trapezius are cut from their origins.

- 1 Part of the vena jugularis communis.
- 2 Vena jugularis externa anterior.
- 3 Vena jugularis externa posterior, or superior.
- 4 Branches of the cervical arteries and veins going to and coming from the splenius, trapezius, and integuments.

*In the Trunk.*

*a a*, &c. The serratus major posticus, inserted into the ribs.

*b b b c c c c*, &c. *d d*, &c. The external intercostals; *b* a part to which the external oblique muscle does not adhere; *c c*, &c. the part to which the external oblique muscle of the abdomen adheres, which is about as extensive as its origin from the ribs; *d* the part over which the external oblique muscle of the abdomen runs without adhering.

*eee*, &c. Fibres which arise partly, externally, tendinous, but chiefly fleshy; and run



in a transverse direction from one rib to another.

*ff*, &c. Part of the internal inter-costals.

*gg*, &c. Fleishy fibres which run in the same direction as the external inter-costals from one cartilaginous ending of the ribs to another.

*hiiklmm* Obliquus internus or ascendens abdominis. It arises from the spine of the ilium, tendinous, and fleshy, which origin is continued to the ligamentum fallopii, from which it arises, and from the symphysis of the os pubis; it is inserted into the cartilage of the lowest rib, tendinous and fleshy, and into the cartilaginous endings of the ribs as far as the cartilago-ensiformis; *h* the fleshy part ending at *ii*; at *k* is an opening through which blood-vessels pass to and from the external oblique muscle; *l* the flat tendon; at *mm* that part of the tendon of this muscle which runs over the rectus is cut off.

*no* Rectus abdominis, arises from the os pubis and is inserted into the cartilago-ensiformis, and the cartilages of the tenth, ninth, eighth, seventh, sixth, fifth, fourth, and third ribs near the sternum; and into the sternum betwixt the roots of the cartilages of the third and fourth ribs.—There are fleshy fibres arising from the first rib which join it at its origin from the sternum, betwixt the cartilages of the third and fourth ribs.—This is called a distinct muscle and named musculus in fummo thorace situs.

*p* The elevating muscle of the tail.

*q* The lateral muscle of the tail.

*r* The inter-transverse muscle of the tail.

*s* The depressing muscle of the tail.

For a more full explanation of the muscles of the tail, see Plate XIX.

*t* The external sphincter ani.

*u* Acceleratores penis.

*w w* Glands.

—The blood-vessels and nerves which are marked on the thorax, are those which were distributed to the parts taken off, as the obliquus externus, latissimus dorsi, membrana carnosæ, &c. and integuments: the nerves come from the nervi dorsales, or costales, and nervi lumbares; the arteries from the arteriæ inter-costales inferiores, and the arteriæ lumbares; the veins from the venæ inter-costales and venæ lumbares.

#### *In the upper Limbs.*

**A B C** Triceps brachii; **A** the part called extensor longus; **B** extensor brevis: the long head arises from the inferior costa of the scapula, and the short head from the humerus, they are inserted into the ancon at **C**.

*abc* Extensor digitorum communis; *a* the

fleshy part which arises from the external condyle of the humerus, the upper and lateral part of the radius and fascia which covers the extending muscles on the cubit, but its principal origin is by a strong flat tendon from the anterior part of the external condyle of the humerus, from which place it continues its origin into the anterior fossula, or sinus, which receives the upper head of the radius when the cubit is bent: it lies under the extensor carpi radialis, to the tendon of which it adheres for about three minutes from its beginning, as well as to the bursal ligament which lies under it; *bc* the tendon which is chiefly inserted into the coffin bone: it sends the slip *c* to the tendon of the extensor minimi digiti, to be, along with it, inserted into the anterior and superior part of the great pastern externally; and another slip which is inserted into the anterior and superior part of the great pastern internally: it likewise sends a flat tendinous slip or aponeurosis to the os orbiculare, and another to the superior part of the metacarpal bone or internal articular ligament near its insertion into that bone: these are analogous to those aponeuroses in the human body, which bind the tendons of this muscle together.

*dd* The tendon of the muscle which is analogous to the extensor minimi digiti in the human body, joined by the slip *c* of the extensor digitorum communis: it arises from the superior part of the radius, from the external part of the ulna for a considerable way down that bone, and from the vagina or case which binds together the bending muscles of the cubit, and is inserted along with the slip *c* into the anterior and superior part of the great pastern externally: this slip, which it receives, is analogous to the aponeurosis in the human body, which binds the tendons of the extensor digitorum together: it sends a slip to the orbicular bone, to which, by that means, it is bound.

*efghi* Flexor carpi ulnaris: *e* the external head, arising, by the tendon *e*, from the external protuberance of the os humeri posteriorly: *f* the internal head, arising from the internal protuberance of the os humeri: *g* the tendon which divides into two a little below *g*, and is inserted, by the part *h*, into the external splint bone, and, by the part *i*, into the os pisiforme or orbiculare.—These heads are two distinct muscles, the one ulnaris externus, the other ulnaris internus; the tendon of the ulnaris externus only is divided, being inserted partly into the external splint bone, and partly into the orbiculare.

*Kk/m* The profundus: it arises by four dis-

tin& heads, the most considerable of which, marked K, arises from the internal protuberance of the os humeri posteriorly under and in common with the sublimis, with which it seems to be confounded, in some degree, all the way down the fleshy part till it comes to the tendon, where the four heads unite, and then the profundus and sublimis make two distinct tendons: the second head arises under the first, from the same protuberance, by a small flatish tendon, which soon swells into a round fleshy belly, then, gradually tapering, becomes a round tendon, and joins in with the first head a little above the orbicular bone of the carpus: the third head k arises fleshy from the ancon near its extremity, and soon becoming a small long tendon joins in with the first and second heads about the same place where they unite: the fourth head arises fleshy from the flat posterior part of the radius about its middle, and (first becoming tendinous) joins in with the heads about the same place where they join with each other; *lm* the common tendon, which is inserted below *m* into the coffin bone.—It receives, from the posterior part of the bones of the carpus, the insertion of what is analogous to the flexor brevis policis manus, and flexor parvus minimi digiti, in the human body.

*N* The sublimis, which arises from the internal protuberance of the os humeri posteriorly, over and in common with the first head of the profundus, with which it seems to be confounded, in some degree, all the way down the fleshy part, till it comes near the orbicular bone of the carpus, where it makes a distinct tendon *no*, which divides, near *o*, for the passage of the profundus, and is inserted into the great pasteron on each side of that tendon, and serves as a ligament to confine it to that bone when the joint is bent; *N* the fleshy part.—It receives, from the posterior and internal part of the radius, the insertion of what is analogous to the flexor longus pollicis manus in the human body.

*pp* Nervus plantaris.

*q* Arteria plantaris.

*r* Vena cephalica; it falls into the jugular vein.

*tt* Vena plantaris externa, and vena plantaris interna.

*u* The burfal ligament, at the juncture of the humerus with the scapula.

*wx* The external articular ligament of the carpus.

*yz* The internal articular ligament of the carpus.

*1 2* A ligament running from the orbicular

bone of the carpus to the splint bone: it serves as a stay to that bone when the flexor carpi ulnaris is in action: there is a large branch of the vena cephalica protuberating under it.

*3 3 4 4* Interosseus, &c. It is like a strong ligament arising from the bones of the carpus, and upper part of the metacarpal bones: it is inserted into the sesamoid bones and great pasteron on each side, and sends off the ligaments *4 4* to the tendon of the extensor digitorum, which it keeps from starting when the fetlock joint gives way.—It supplies the places of the interossei manus, and abductors of the fore-finger, little finger, and short abductors of the thumb, with the adductors of the thumb and little finger.

*In the lower Limbs.*

*ab* Iliacus internus; *a* its origin from the spine of the ilium: it arises from the whole or superior half of the inside of the os ilium, and has some origin from that part of the fascia lata which lies betwixt it and the glutei: it is joined in with the psoas magnus from its origin, and with it inserted into the little trochanter of the thigh bone: they seem to be but one muscle.

*c d d d d e f g h* Gluteus medius; *c* the part which arises from the tendinous surface of the sacro-lumbalis, and does not adhere to the fascia lata; *d d d d* the part which receives fleshy fibres from the fascia lata; *e* its origin from the ilium, which is continued from this place to the posterior part of the spine, and all that space of the os ilium which lies betwixt the spine and the gluteus internus, partly tendinous, but chiefly fleshy; and from the ligament which goes between the ilium and the transverse processes of the os sacrum; *f* the part which lies under the gluteus externus and biceps cruris; *g g h* its insertion into the great trochanter.

*A A B* Gluteus externus; *A A* the fleshy part; *B* a flat tendon.

*C* Gluteus medius.

*D* Pyramidalis.

*E* Musculus fascia lata.

*F* Sartorius.

*i k l m n G H* Pyramidalis, arises from the os sacrum and the ligament betwixt that and the ischium: it is, for a considerable way, inseparably joined to the gluteus medius, and inserted at *k* into the back part of the great trochanter: it receives an expansion from the gluteus externus: *G* the insertion of its flat tendon *H*.

*o* Triceps secundus; it arises from the ischium, and is inserted into the linea aspera of the thigh bone, and near its insertion is attached to the large adductor.

*q r s t* Triceps tertius, the large adductor of



the thigh, or adductor magnus: it arises from the ligament running from the sacrum and coccyx to the ischium; which ligament is probably nothing more than the flat tendon of this muscle, to the posterior edge of which the fascia lata is joined, and to the anterior edge of the ligament running betwixt the os sacrum and the ischium: its principal origin is from the tubercle of the ischium: it is inserted by a strong tendon into the internal condyle of the humerus, behind the origin of the articular ligament and a little below it, and by a flat tendon into the articular ligament and tendon of the semi-tendinosus: it joins in with the long adductor near its insertion.

uuw Gracilis: it arises from the edge of the inferior branch of the os pubis, near the symphysis, by a broad and very short tendon; from thence the fleshy fibres run down to the internal condyle of the os femoris, where they terminate in a thin tendon, which afterwards degenerates into a kind of aponeurosis, and is inserted into the fore part of the inside of the head of the tibia.

xyz The inferior part of the semi-tendinosus: the upper part is cut off at x: the origin, by carnosous fibres from the broad tendon of the adductor magnus, is shewn at s: the tendinous production which wraps over the gemellus to join in with the fascia lata and tendon of the biceps cruris is cut off at yy: it sends off an expansion which is attached to the tendinous ligament which lies over the gemellus and covers some nerves and blood-vessels which pass over the gemellus and run down the leg; they are marked 14 in Plate II.: it is also inserted by a flat tendon or expansion into the plantaris near the bottom of the fleshy part; through which expansion there is an opening for the passage of a large nerve marked 67 in Plate III. on the left lower limb; its principal insertion is by a flat tendon into the superior and anterior part of the tibia internally.

123 Semi-membranosus; 2 its origin from the tubercle of the ischium: at its origin it is attached to the short head of the biceps cruris; about z it joins in with the semi-tendinosus, and is with it inserted into the tibia.

456778 Vastus externus; 4 its origin from the posterior part of the great trochanter; 5 the part which arises from the inside: they are both externally tendinous: its origin is continued fleshy along the inside of the femoris for about two-thirds of its length downwards; 6 the fleshy belly; 77 its insertion into the patella; 78 its insertion into the lateral ligament of the

patella: it is likewise inserted into the tendon of the rectus.

9 Rectus cruris: it arises from the external or posterior part of the inferior spine of the ilium by one tendon, and by another from the anterior part of the same spine; these tendons soon unite and form a large fleshy belly, which descends to be inserted into the patella.

1011121213141516 The gemellus; 10 its external head, which arises out of and from the borders of a large fossa or notch in the os femoris, a little above the external condyle, at 10 externally tendinous; 11 its internal head, which arises from a roughness on the lower and posterior part of the os femoris a little above the internal condyle: 1212 a sort of flat tendon, which may be easily separated from the muscle, only adhering to it by its external edge: its internal edge joins the fascia of the semi-tendinosus, &c. it runs over the surface of the muscle, and joins in with the fascia sent from the semi-tendinosus, &c. which joins it both above and below, and by that means makes a case for the tendons of the gemellus and plantaris; 13 the external fleshy part; 14 the external fleshy part lying under the expansion of the semi-tendinosus, &c.; 15 the tendon formed by part of the external head; 16 the tendon of the internal head, formed by the internal head and part of the external head: these tendons, 15 and 16, are both together inserted into the os calcis.

17 At 17 is marked the cutting off of the fascia from the semi-tendinosus.

1819 The soleus: it arises from the external articular ligament of the knee, and is inserted into the fasciæ or tendinous parts of the gemellus 1212 a little below 19, or attached to them and inserted with them into the os calcis: the fasciæ from the biceps, semi-tendinosus, gracilis, &c. with the tendinous part, marked 1212 in this table, communicate with or are attached to each other, and are inserted partly into the os calcis on the inside of the principal tendon of the gemellus, with which, at their insertion, they are confounded, and are partly inserted on each edge of the tendon of the plantaris as it runs over the os calcis: their lateral parts are joined posteriorly by a ligamentous membrane, marked 222324 in Plate XIX.

202122 The tendon of the plantaris: this muscle arises under the external head of the gemellus (in which it is in a manner wrapped up), out of the large fossa, or notch, in the os femoris: above the external condyle, on the external side of its fleshy belly, the gemellus is attached to it by fleshy fibres; at 20 it runs

over the end of the os calcis, where it is bound on each side by ligaments which prevent its slipping to either side; at 21 it divides to be inserted on each side of the inferior part of the great pastern posteriorly, and to give passage to the tendon of the flexor digitorum pedis, to which tendon it serves as a ligament to confine it to the great pastern when the fetlock joint is bent, and by that means it receives assistance from that tendon in bending the fetlock joint. — This is analogous to the plantaris and short flexor of the toes in the human body, viz. the part above 20 to the plantaris, and the part below 20 to the short flexor of the toes.

23 25 25 25 26 Flexor digitorum pedis; 23 the fleshy belly, externally tendinous, which arises tendinous and fleshy from the fibula and articular ligament which runs from the external condyle of the os femoris to and down that bone, and from the posterior part of the tibia, tendinous and fleshy, which origination is continued near half the way down that bone from a considerable roughness, the protuberating parts of which give rise to the four or five tendinous parts of which this muscle is composed; 25 25 25 26 the tendon, inserted at 26 into the coffin bone.

27 27 28 29 Peronæus; it arises from the upper part of the fibula and articular ligament, which runs from the external condyle of the os femoris down the fibula: it has an origin from the tendinous surface of the flexor digitorum pedis, near all the length of the fleshy part of that muscle; 28 29 its tendon, which is inserted into the tendon of the long extensor of the toes at 29, part of which is afterwards inserted into the great pastern on its superior and anterior portions externally.

30 31 Extensor longus digitorum pedis; it arises along with the strong tendon of the tibialis anticus, to which it is inseparably joined near its origin: it arises also from the tibia; 30 its fleshy belly; 31 its tendon, at 29 joined by the tendon of the peronæus, with part of which it sends off a slip to be inserted into the great pastern: on its superior and anterior part externally it sends another slip, with the fascia which join it, to be inserted into the superior and anterior part of the great pastern internally, but its principal insertion is into the anterior and superior part of the coffin bone.

32 Extensor brevis digitorum pedis.

33 34 Tibialis posticus; it arises from the external side of the posterior part of the head of the tibia, and from the tendinous surface of the flexor digitorum pedis; 33 its fleshy belly;

34 its tendon, inserted into the tendon of the flexor digitorum.

35 35 Popliteus: it arises tendinous from the external condyle of the os femoris under the articular ligament, and is inserted into the tibia at 35 35 externally tendinous.

36 36 Nervus sciaticus.

37 Nervus sciatico-cruralis.

38 Nervus popliteus.

39 Nervus plantaris externus and nervus plantaris internus, which are branches of the nervus sciatico-tibialis.

40 A branch sent from the nervus sciaticus, which divides, one branch to go with the blood-vessels to the gluteus, another to the biceps cruris, and another to the semi-tendinosus, &c.

41 Nervus sciatico-peronæus.

42 42 Rami of the sciatico-peronæus; they run in betwixt the peronæus and long extensor of the toe, and are distributed to those muscles with the tibialis anticus and the neighbouring parts.

43 A branch of the nervus sciatico-cruralis.

44 45 46 Branches of the arteria pudica communis which is a branch of the internal iliaca or hypogastrica; 45 a branch cut off where it enters the biceps cruris; 46 branches cut off, which pass through the fascia lata to go to the semi-tendinosus.

47 Arteries which go to the biceps cruris.

48 A branch of the arteria poplitea which goes to the biceps cruris.

49 Arteria tibialis anterior.

50 Arteria plantaris externa.

51 52 53 Branches of the vena hypogastrica; at 52 a branch which comes from the biceps cruris; at 53 branches are cut off which come from the semi-tendinosus.

54 A branch of the vena poplitea which comes from the biceps.

55 A branch of the vena obturatrix.

56 Vena plantaris externa and vena plantaris interna.

57 57 Glandula poplitea, commonly called the pope's eye.

58 58 59 59 60 60 A ligament running from the spines of the os sacrum to its transverse processes, and from thence to the tubercle of the ischium, from which the upper head of the biceps receives a fleshy origin; 59 59 60 60 shew the place where the fascia lata is cut off which runs betwixt the fascia lata and biceps cruris.

61 62 The external articular ligament, which is inserted above into the tibia and below into the astragalus and os calcis.



63 63 A ligament which binds together the bones of the tarsus and metatarsus, inserted externally above into the os calcis, and below into the external splint bone, and internally into the os cuboides.

64 A burfal ligament.

65 A strong ligament which binds the os calcis to the astragalus, or naviculare, ossa cuneiformia, and the internal splint bone.

66 66 67 67 Interosseus, &c. it is like a strong ligament, arising from some of the tarsal bones, and the upper part of the metatarsal bones, and is inserted into the sesamoid bones and great pastern on each side: it sends off the parts 67 67 on each side to bind down the tendon of the extensor digitorum pedis.—This is of a ligamentous nature, but supplies the places of the interosseus, the short flexor, adductor and abductor of the great toe, the abductor and short flexor proper to the little toe, and a ligament which arises from the calcaneum and belongs to the cuboid bone; but sends off an excursion which joins the origins of the short flexor and interosseus of the little toe, both those of the interossei of the third of the small toes and that of the adductor of the great toe in the human body. The ligamentous aponeurosis 67 is sent partly from the interosseus, &c. and partly from the capsular of the fetlock joint to be inserted into the tendon of the extensor digitorum pedis.

*Explanation of Plate XXI. exhibiting the muscles, &c. of a horse, viewed posteriorly.*

*In the Head and Wind-pipe.*

*a a a* The orbicular muscle of the mouth.

*b b* Musculus caninus, or the elevators of the corner of the mouth and of the cheek: it arises from the upper jaw bone, and is inserted, at *b b*, into the orbicular muscle of the mouth and buccinator.

*c d* The buccinator: it arises in three different places: about *d* the superior fibres arise from the alveoli of the upper jaw: the middle fibres arise from the ligamentum inter-maxillaris, and the inferior from the lower jaw: it is inserted into the glandulous membrane of the inside of the cheek and lips, and at *c* into the orbicularis oris.

*e* The glandulæ buccales, or glandulous membrane which lines the inside of the lips.

*f g* The elevator of the chin.

*h* The globe, or ball of the eye.

*n* Arteria temporalis.

*o o* Arteria angularis.

*p* Vena angularis.

*q r s* Vena temporalis.

*t* An artery which goes to the glandulæ sublinguales.

*u* Glandulæ sublinguales.

*w x* Genio-glossus; *w* its tendinous origin from the jaw bone; *x* its insertion into the tongue: this insertion is continued from the os hyoides to near the tip of the tongue.

*y z* Hyo-thyreoideus; *y* its origin from the thyroid cartilage; *z* its insertion into the os hyoides.

*1 1 2* The lower constrictor of the pharynx.

*3 4* Hyo-glossus; arising at *3* from the os hyoides, and inserted into the tongue near *4*.

*5* Part of the os hyoides.

*6* The outer ear.

*In the Neck.*

*a b c d e f* Longus colli; *a* the part coming from its inferior origin from the lateral parts of the bodies of the five uppermost vertebræ of the back, and the lowest of the neck; *b c d e* its originations from the transverse processes of the sixth, fifth, fourth, and third vertebræ of the neck: it is inserted at *f* into the anterior oblique process of the sixth vertebra of the neck: it is also inserted into the bodies of the fifth, fourth, third, and second laterally, near their transverse processes, and into the anterior eminence or tubercle of the body of the atlas.

*g g*, &c. *h h*, &c. Inter-transversarii posteriores colli; *g g*, &c. their originations from the roots of the oblique processes, and betwixt them and the transverse processes where the inter-vertebralis does not cover; *h h*, &c. their insertions into the sixth, fifth, fourth, third and second transverse processes of the vertebræ of the neck.—To divide these into distinct muscles there seems to be, for each insertion into the transverse processes, two originations, viz. one from the inferior part of the vertebra below the insertion, and the other from the upper part of the next to that.—The lowest origin is from the first vertebra of the back, part of which is inserted into the transverse process of the seventh vertebra of the neck.

*i k l l* Obliquus capitis inferior; *i k* its origin from all the length of the spine of the second vertebra of the neck; at *k*, where it runs under the rectus capitis posterior longus, it is externally tendinous; it arises from all the posterior part of that vertebra which the inter-vertebralis does not cover, and is inserted, at *l l*, into all or most of the broad transverse process of the atlas, which is not covered by the inter-vertebralis.







*mn* Obliquus capitis superior; *m* its fleshy origin, which is pretty deep from the broad transverse process of the atlas; *n* its insertion into the occiput.

*op* Rectus capitis posticus major; *o* its origin from the ridge or spine of the lower oblique process of the second vertebra of the neck; *p* its insertion into the occiput.

*q* Rectus capitis posticus minor, or rather medius: it arises from the root of the spine of the oblique process of the second vertebra of the neck above the origin of the rectus major; and continues its origin for about three minutes up the spine, or ridge of this vertebra: it is inserted by a short and broad tendon into the occiput, wrapping over the surface of the inter-vertebralis.

*rstuvw* The multifidæ of the spine, arising at *rstu* from the descending oblique processes of the vertebrae of the neck, partly, externally tendinous; *vw* the insertion of the parts arising at *stu*, from the descending oblique processes of the fifth, fourth, and third vertebrae of the neck, viz. all that part which arises from the third vertebra *n*, the external and middle parts of the origin from the fourth vertebra *t*, and the external part of the origin from the fifth vertebra *s*. The inner part of the origin from the fourth vertebra, and the middle part from the fifth vertebra, with the external part from the sixth vertebra *r*, are inserted into the spine of the third vertebra.—There are fibres inserted into the spine of the third vertebra, arising from three vertebrae below it; and in that manner it runs on down to the bottom of the spine.

*yyy* The inter-vertebralis appearing betwixt the originations of the inter-transversarii posteriores colli: they arise from the ascending oblique processes of the five inferior vertebrae of the neck, and from the space betwixt the oblique processes of the uppermost vertebra of the back; they are inserted each into the lateral parts of the bodies of the vertebrae above their origin respectively.

- 1 1 Branches of the cervical nerves.
- 2 Branches of the cervical arteries.
- 3 Branches of the cervical veins.
- 4 Part of the vena jugularis communis.
- 5 Vena jugularis externa anterior.
- 6 Vena jugularis externa posterior or superior.

7 8 9 10 Ligamentum colli; 8 the place where the trapezius and rhomboides are cut from their originations from this ligament; 9 the part which is inserted into the spines of the

superior vertebrae; 10 the part which is inserted into the occiput.

*In the Trunk.*

*a* Semi-spinalis dorsi; it arises fleshy from the tendinous surface of the longissimus dorsi: and inserted into the spines of the ten superior vertebrae of the back: it communicates with the spinalis cervicis as well as the fleshy fibres of the spinalis dorsi before its insertion, the spinalis dorsi being inserted below it.

*b b c c*, &c. The external inter-costals; they arise, at *b b*, from the inferior edge, and a little of the outside of each rib, the last excepted: they are a little tendinous, and descending obliquely downwards, are inserted at *c c* into the upper edge and a little of the outside of each rib, the first excepted.

*d d e e*, &c. The internal inter-costals; they arise at *d d* from the superior edge of the bony part of each rib, except the first (not covering any of the outside), and from the edges of the cartilages of the ribs, and a considerable part of the outside of them; they are chiefly externally tendinous, but partly fleshy, and ascending obliquely upwards and forwards are inserted into the lower edge of the bony part of each rib, and into the edges and part of the outsides of their cartilages, the last rib excepted.

*f* The elevating muscle of the tail.

*g* The lateral muscle of the tail.

*h* The inter-transverse muscle of the tail.

*i* The depressing muscle of the tail.

The muscles of the tail are more fully explained in the plate.

*k k l m m* Transversalis abdominis; *k k* the part which arises from the inside of the ribs below the triangularis of the sternum and the diaphragm, by fleshy digitations; the part *l* arises from the three or four uppermost transverse processes of the vertebrae of the loins by an aponeurosis, and fleshy from the internal labium of the crista ossis ilii, and a great part of the ligamentum fallopii, or tendinous margin of the internal obliquus of the abdomen; and is inserted into the ensiform cartilage and linea alba, adhering to the posterior plate of the aponeurosis of the internal oblique muscle of the abdomen: at its first passing under the rectus the lower part of the aponeurosis of the transversalis is separated from the upper in a transverse direction from the edge of the rectus to the linea alba, about half way betwixt the navel and synchondrosis of the pubis, the upper part going behind the rectus and the lower before it and the pyramidalis.



oo, &c. Branches of the nervi costales, lying upon the transversalis, which go to the abdominal muscles and integuments.

p Branches of the nervi lumbares, which go to the abdominal muscles and integuments lying over the transversalis.

q q, &c. Arteries from the intercostalis inferior.

r The external branch of the outer iliac artery in two ramifications, accompanied by s.

s The external branch of the outer iliac vein in two ramifications.

t The external sphincter ani.

u Acceleratores penis.

#### *In the upper Limbs.*

abc Brachialis internus; a the part which arises from the neck of the humerus; b the part which arises from the internal lower part of the scapula; at c it is going to be inserted into the radius a sublimis, with which it seems to be confounded, in some degree, all the way down the fleshy part, till it comes to the tendon where the four heads unite, and then the profundus and sublimis make two distinct tendons: it is tendinous at d: the second head arises under the first, from the same protuberance, by a small flattish tendon, which soon swells into a round fleshy belly, then tapering gradually becomes a round tendon, and joins in with the first head a little above the orbicular bone of the carpus: the third head f arises fleshy from the ancon near its extremity, and soon becomes a small round tendon; g joins in with the first and second heads about g, where they unite; the fourth head arises fleshy from the flat posterior part of the radius, about its middle (first becoming tendinous), and then joins in with the other heads about the same place where they join in with each other: they all together form the common tendon hi, which is inserted, at i, into the coffin bone.—It receives, from the posterior part of the bones of the carpus, the insertion of what is analogous to the flexor brevis pollicis manus, and flexor parvus minimi digiti in the human body.

defghi Profundus, or perforans; it arises by four distinct heads, the first, or most considerable, of which is that marked de in this plate: it arises from the internal protuberance of the humerus, posteriorly, under, and in common with the sublimis, with which it seems to be confounded, in some degree, all the way down the fleshy part, till it comes to the tendon where the four heads unite, and then the profundus and sublimis make two distinct tendons: it is tendinous at d: the second head arises under the first, from the same protuberance, by a small flattish tendon, which soon swells into a round fleshy belly, then tapering gradually becomes a round tendon, and joins in with the first head a little above the orbicular bone of the carpus: the third head f arises fleshy from the ancon near its extremity, and soon becomes a small round tendon; g joins in with the first and second heads about g, where they unite; the fourth head arises fleshy from the flat posterior part of the radius, about its middle (first becoming tendinous), and then joins in with the other heads about the same place where they join in with each other: they all together form the common tendon hi, which is inserted, at i, into the coffin bone.—It receives, from the posterior part of the bones of the carpus, the insertion of what is analogous to the flexor brevis pollicis manus, and flexor parvus minimi digiti in the human body.

lmnn The sublimis or perforatus; it arises from the internal protuberance of the os humeri, posteriorly, over, and in common with

the first head of the profundus, with which it seems to be confounded, in some degree, all the way down the fleshy part, till it comes near the orbicular bone of the carpus, where it makes a distinct tendon lmnn, which divides at m for the profundus, and is inserted on each side of the great pattern, as at n and n: it serves as a ligament to confine the tendon of the profundus to that bone when the joint is bent.—This muscle receives from the posterior and internal part of the radius, the insertion of what is analogous to the flexor longus pollicis manus in the human body.

e A ligament which binds down the bending tendons, explained in Plate XIX.

pq Flexor carpi radialis; it arises from the internal protuberance of the os humeri, and is inserted at q into the splint bone.

rr Interosseus, &c. it arises from the bones of the carpus and metacarpus, and is inserted, at rr, into the ossa sesamoida.

s Nervus radialis.

t Vena cephalica: below the carpus it is called vena plantaris.

uu Ligaments which bind the orbicular bone to the radius, the bones of the carpus and metacarpal bone.

vv, &c. Articular ligaments.

xx The cartilages belonging to the coffin bone.

#### *In the lower Limbs.*

abbc Iliacus internus; a part of its origin from the posterior part of the anterior spine, and some marks of its origin from the fascia lata; bb its origin from the anterior part of the anterior spine of the ilium, which is continued from all, or most part, of the inside of the ilium, which lies before the transverse processes of the vertebræ of the loins and sacrum: it joins in with the psoas magnus from its origin, and is, with it, inserted into the little trochanter of the thigh bone: they seem to be but one muscle.

deeffgg Gluteus internus; dee its origin from all that part of the outside of the ilium which is below the origin of the gluteus medius, running between the anterior inferior spine, and the great posterior sinus: it is likewise fixed in the edge of that sinus in the spine of the ischium, and in the orbicular ligament of the joint of the hip: it is inserted, at ff, into the anterior part of the upper edge of the great trochanter: it is externally tendinous at d, and there are tendinous fibres running through it at gg.

hi Obturator internus; it arises from the

internal labium of all the anterior half of the foramen ovale a little distance from the neighbouring part of the obturator ligament, and also both above and below the foramen: it likewise arises from the upper half of the inside of the os ischium, from the upper oblique notch in the foramen ovale, to the superior part of the great posterior sinus of the os ilium; at *b* it comes out of the pelvis through the posterior notch of the ischium; and at *i* is inserted into the great trochanter.

*k l* Gemini; the upper part of which, *k*, arises from the acute process or spine of the ischium, near the sinus or notch through which the obturator internus bends itself; and is inserted, at *k*, into the great trochanter along with the obturator internus, and the other of the gemini, *l*, which arises from the posterior edge of the sinus, through which the obturator internus bends itself, and from the outer part of the tubercle near the lower part of that sinus, and is inserted along with the tendon of the obturator internus, at *l*, into the great trochanter.

*m* Obturator externus; it arises from the outer or anterior side of the os pubis, at the edge of that hole next the small ramus of the ischium, and a little to the neighbouring parts of the obturator ligament; and is inserted, at *m*, into the great trochanter.

*n* Quadratus; it arises from the outer edge, or the obtuse line which runs from under the acetabulum towards the lower part of the tuberosity of the ischium; and is inserted, at *n*, into the oblong eminence of the thigh bone, which stands out partly from the posterior side of the trochanter major, and partly below the same.

*opqqqrst* Adductor magnus femoris, or triceps femoris; *o* the first part, or triceps primus; *pqq* the second part, or triceps secundus; *rst* the third part, or triceps tertius; it begins its origin from the outer part of the anterior edge of the os pubis near its syncondrosis, from whence it continues to arise as far as the tubercle of the ischium; from the tubercle of the ischium at *s* and fascia lata at *r*; and is inserted the first part at *o*, and the second at *qq*, into the linea aspera in some measure externally tendinous, and into the internal condyle of the os femoris by a strong tendon behind the origin of the articular ligament, and a little below it.

*uw x* Gracilis; it arises from the edge of the inferior branch of the os pubis near the symphysis by a broad and very short tendon; from thence the fleshy fibres run down to the internal condyle of the os femoris, where they

terminate in a thin tendon, which afterwards degenerates into a kind of aponeurosis *x*, and is inserted into the fore part of the inside of the head of the tibia.

*y* The tendon of the musculus parvus, in articulatione femoris situs; it arises by a flat tendon over the posterior tendon of the rectus, from a little above the edge of the acetabulum, and soon becoming a round fleshy belly dwindles again into a small flat tendon, which is inserted into the thigh bone at *y*.

*I 1 2 2 3 4 5* Cruralis, or cruræus; *I 1* its origin, from the anterior and outer part of the thigh bone, externally tendinous, being by small flat tendons, which disappear at *2 2*, but inwardly fleshy: it is inserted into the patella at *3 4*, and into the external lateral ligament, at *4 5*, by a flat tendon or fascia; at *3* it is partly divided for the reception of blood-vessels.

*6 7 7 8 10* Vastus internus; *6* the part arising from the upper part of the thigh bone, which origin is continued almost down to the inner condyle, or from about half the length of the muscle, by fleshy fibres, from all that space between the origin of the cruræus and the insertion of the adductor magnus femoris: from all this extent the fibres run obliquely downwards and outwards, and are inserted, at *7 7*, into the tendinous surface of the cruræus, and at *8* into the patella; *6 7 7 8* shew the impression made on this muscle by the rectus cruris; *10* shews the external surface of the internal side of this muscle on the left side.

*11* Interosseus, &c.

*A* Sartorius.

*B* Triceps secundus.

*C* Transversus penis.

*E* One of the gemini.

*F* Obturator internus.

*12 13 14 15 16 17 18 19 20 21* Plantaris; *12* its origin out of the large fossa, or notch, of the os femoris; *13 14* its belly; at *13* fleshy fibres are attached to the tendinous surface of this muscle; *15 16 17 18 19 20 21* the tendon, which, about *15*, begins to wrap over the tendon of the gemellus; at *16* and *17* it is attached to the os calcis by ligaments, which are inserted into it in those places; and at *18* to the great pattern by a ligament inserted into it there; at *19* it divides for the passage of the tendon of the flexor digitorum pedis; at *20* and *21* it is inserted into the great pattern.—The parts *16* and *17* may be called parts of the origin of the short flexors of the toes; the part above *16* and *17* being analogous to the plantaris, and the



part below to the short flexors of the toes in the human body; one being inserted into the calcaneum, and the other arising from it; but, in a horse, one is like a continuation of the other, attached to the calcaneum on each side.

22 23 23 Popliteus; at 22 it arises, tendinous, from the external condyle of the os femoris, under the articular ligament, and near 23 23 it is inserted externally tendinous into the tibia.

24 25 26 Tibialis posticus; 24 its origin from the external side of the posterior part of the head of the tibia; it arises also from the tendinous surface of the flexor digitorum pedis; 25 its fleshy belly; 26 its tendon inserted into the tendon of the flexor digitorum pedis.

27 28 29 30 31 31 Flexor longus digitorum pedis; 27 its origin from the fibula and the ligament which runs from the external condyle of the os femoris, to and down that bone, tendinous and fleshy, and from the posterior part of the tibia, tendinous and fleshy; which origination is continued near half the way down that bone from a considerable roughness, the protuberating parts giving rise to the tendinous parts of which this muscle is composed; 28 the fleshy belly, externally tendinous; 29 30 31 31 the tendon by which it ends, beginning at 29, coming from under the plantaris at 30, and inserted into the coffin bone at 31 31.—This muscle is analogous to both the flexor longus digitorum pedis, and flexor longus pollicis pedis, in the human body: it receives an addition from the os calcis and ossa cuneiforma, which is analogous to a muscular head in the human body, which consists of two portions distinct from the beginning, both arising from the calcaneum, and inserted into the tendon of the long flexor of the toes before it divides; soon after which the lumbricales arise from the tendons into which it is divided.

32 32 Branches of the arteria glutæa, accompanied with veins and nerves.

33 The large sciatic nerve, which, on the thigh, is called sciatico-cruralis.

34 A branch of the arteria cruralis.

35 Arteria poplitea.

36 Arteria obturatix.

37 Nerves going to the tibialis anticus; they are rami of the small sciatic branch.

38 Nervus sciatico-tibialis internus.

40 40, &c. Articular ligaments.

41 41 The cartilages belonging to the coffin bone.

*Explanation of Plate XXII. exhibiting the muscles, &c. of a horse, viewed posteriorly.*

*In the Head and Neck.*

*a* Stylo-glossus.

*b* Stylo-pharyngæus.

*c* Stylo-hyoidæus.

*d* Hyo-glossus; arises from the os hyoides, and is inserted into the tongue.

*e* Pterygoidæus internus.

*f* Pterygoidæus externus.

*g* The middle constrictor of the pharynx.

*h* The superior constrictor of the pharynx.

*i* Crico-arytænoidæus.

*k* The posterior or inferior lateral cartilage.

*l* The elevator of the chin.

*L* the outer ear.

*m n*, &c. Inter-vertebrales; *m*, &c. their origins from the ascending oblique processes of the five inferior vertebræ of the neck: the lowest origin is from the space betwixt the oblique processes of the uppermost vertebra of the back; *n*, &c. their insertions into the lateral parts of the bodies of each vertebra above their origins.

*o p q r q q q r* Ligamentum colli; the part *p* arises from the spines of the second and third vertebræ of the back, and the part *o* from most of the spines of the back below them; the part *p* is inserted, at *q q q q q*, into the spines of the five superior vertebræ of the neck, and the part *o* is inserted into the occiput at *r*.

*In the Trunk.*

*a a* Multifidi spinæ.

*b* The ligament which runs over the spines of the os sacrum.

*c* The elevating muscles of the tail.

*d* The lateral muscle of the tail.

*e e* The inter-transverse muscles of the tail.

*f* The depressing muscle of the tail.

The muscles of the tail are more fully explained in Plate XIX.

*In the upper Limbs.*

*a a b c c d d* Interosseus; arising at *b* from the os magnum or great round headed bone of the carpus, and, at *c c*, from the upper part of the metacarpal bone: it is fleshy at *a a*; and inserted, at *d d*, into the sesamoid bones.

*e* Vena cephalica; below the carpus it is called vena plantaris.

*f* Vena brachialis.

*g* Arteria brachialis.

*h* Nervus medianus.

*i i i* Ligaments which bind the orbicular bone

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to the radius, the bones of the carpus, and metacarpal bone.

*kk*, &c. Articular ligaments.

*lll* Ligaments which bind the sesamoid bones to the great pasterns.

*mm* Cartilages belonging to the coffin bone.

*n* A cartilaginous ligament which ties the two sesamoid bones together.

*In the lower Limbs.*

**A B B C** Iliacus internus; A part of its origin from the posterior part of the anterior spine, with some marks of its origin from the fascia lata; B B its origin from the anterior part of the anterior spine of the ilium, which is continued from all or most part of the inside of the ilium which lies before the transverse processes of the vertebræ of the loins and sacrum: it joins in with the psoas magnus from its origin, and is with it inserted into the little trochanter of the thigh bone: they seem to be but one muscle.

*aa* Gemini.

*bc* Obturator internus.

*dee* Obturator externus; *d* the fleshy part; *ee* the tendon.

*fg* Quadratus; *f* its origin; *g* its insertion.

*hi* Pectineus; *h* part of its origin; *i* its insertion externally tendinous.

*k* Part of the sartorius.

**K** Triceps secundus.

*lmmn* Gracilis; *l* part of its origin; *lmm* its fleshy part; *n* its flat tendon.

*op* Musculus parvus in articulatione femoris situs; *o* its origin; *p* its insertion.

*qrs* The origin of the rectus; *q* its internal origin; *r* its external origin; *s* the place where it is cut off.

*t* The external sphincter ani.

*uw* The internal sphincter ani, attached, at *u*, to the bodies of the second, third, and fourth bones of the tail.

*xyz* Levator ani, arising near *x* (where it is tendinous), from the acute process of the ischium; it is inserted, at *y*, into the transverse processes of the second, third, and fourth bones of the tail; and at *z* into the internal sphincter ani.

1 Transversus penis.

2 Acceleratores penis.

3 One of the erectores penis.

4 Arteria sacra.

5 Iliaca minor.

6 Arteria glutæa; of which 7 is a branch.

8 Arteria sciatica.

9 Pudica communis.

10 Arteria obturatrix.

11 Arteria cruralis, of which 12 is a branch.

13 Arteria poplitæa.

14 Vena poplitæa.

15 Arteria tibialis posterior.

16 Arteria peronæa posterior.

17 17 The large sciatic nerve, which on the thigh is called sciatico-cruralis.

18 Nervus sciatico-tibialis internus.

19 19 Nervus plantaris externus and nervus plantaris internus.—They are branches of the sciatico-cruralis internus.

20 A ligament which binds the fibula to the tibia.

21 A strong ligament, which binds the os calcis to the splint bone.

22 Ligaments which bind the bones of the tarsus together.

23 24 24 Interosseus, &c. 23 its origin from the tarsal and metatarsal bones; 24 24 its insertions into the sesamoid bones and upper part of the great pastern on each side. It sends off a small ligament on each side of the tendon of the extensor longus digitorum pedis.—This is of a ligamentous nature, but supplies the places of the interosseus, the short flexor, adductor and abductor of the great toe, the abductor and short flexor proper to the little toe, and a ligament which arises from the calcaneum.

25 A cartilaginous ligament, which ties the two sesamoid bones together.

26 27 27 27 Ligaments which bind the sesamoid bones to the great pastern.

28 28 Cartilages belonging to the coffin bone.

29 29, &c. Articular ligaments.

**MUSCULO-CUTANEUS NERVUS.** See Plate XI. and the description of "*Muscles, &c. on the right upper limb,*" under the article HORSE.

**MUSK**, moschus, an odoriferous grumous substance. The animal which affords it, is the *capreolus moschi* of Gesner; *moschus moschiferus*, Linn; the musk animal of Le Brun, &c. The best musk is brought from Tonquin, in China. It is too costly, as well as too uncertain in its effect, for veterinary use; though, according to Gibson, *castor*, which is an analogous substance, was found to have powerful effects on the horse. See the article EPIDEMIC.

**MUST**, *mustum*; the saccharine juice of several fruits, susceptible of the spirituous fermentation, and particularly of grapes, before the commencement of this fermentation.

**MUZZLE**, the nose or snout of a horse; also a kind of halter put about the nose of a horse or mule, to prevent his eating or biting.



From that part of a horse's head, where the nose-band of the bridle rests, to his muzzle, he should have nothing but skin and bone; and the smaller the better: therefore it is commonly said, by jockeys and grooms, he should be able to drink out of a beer-glass.

**MYLO-GLOSSUM** (from *μολη*, *mola*, or *dentes molares*, the grinders, and *γλωσσα*, *lingua*, the tongue), a pair of muscles, thus called, because they arise about the back side of the grinding teeth, and are inserted into the ligament of the tongue; they help to pull it upwards. See **TONGUE**.

**MYLO-HYOIDÆI**. These muscles rise with a large basis, from the inferior part of the lower jaw, and are inserted at the basis of the os hyoides.

**MYODES PLATYSMA**, from *μυς*, a muscle, and *πλατος*, broad, i. e. *platysma myoides*.

**MYOPS** (from *μυς*, a mouse, and *ωψ*, *oculus*, an eye), mouse-eyed, or pur-blind, is when the eye is so convex, that the rays unite before they come to the retina, which makes the eye also look small; whence the name. Sheep are naturally short-sighted.

**MYOTOMY**, *Myotomia* (from *μυων*, *musculus*, a muscle, and *τεμνω*, *feco*, to cut), a dissection of the muscles.

**MYRRH** (from the Hebrew term *mur*, from *mar*, bitter); a gummy resinous concrete, brought immediately from Alexandria, Smyrna, and Aleppo; but from what plant obtained is uncertain. It is said to be a produce of the *scandix odorata*, or *scandix seminisbus sulcatis angulatis, floribus albis*; Clafs, **PENTANDRIA**; Ord. **DYGYNIA**; Linn. Gen. Plant. 357. Sweet-fern, or myrrh. It is brought to us in globes or drops of various colours and sizes. That of a reddish brown colour, not verging too much to yellowish or blackish, which is uniform on the outside, internally speckled or streaked with white, clear and bright, somewhat unctuous to the touch, but not tenacious so as to stick to the fingers, is the best.

This drug is subject to a variety of frauds; it is mixed with hard, shining, yellow pieces of a gum which resembles gum arabic, and is void of smell or taste. Pieces of bdellium are mixed with it, and are known by their darker colour, and their being soft within, which myrrh never is; also by their different smell and taste. Sometimes there is an unctuous gummy resin, of a strong, ungrateful smell, and a bitterish, very durable taste, obviously different both from those of bdellium and myrrh; also pieces of a hard, compact, dark-

coloured kind of tears, less unctuous than myrrh, of an offensive smell, a most ungrateful bitterness, and of a very resinous nature. The myrrh itself is either, 1. *Blackish*, which is gathered from old trees, and, being more resinous, is fitter for tinctures. 2. *Yellow*, which is from young trees: this sort contains much gum; it easily dissolves in the mouth, has a much more agreeable aromatic smell, and is what should be used as an internal remedy.

Myrrh is very highly spoken of, by Gibson, as a veterinary remedy. It is esteemed balsamic, vulnerary, antiseptic, attenuant, deobstruent, powerfully promoting the fluid secretions, &c. It manifestly stimulates the stomach, creates a frequency of the pulse and a degree of heat over the whole body. It strengthens also the viscera, promotes the secretions, resists putrefaction, and removes obstructions. In cachectic habits, in diseases of the chest, and in pestilential fevers, it has been recommended; and Gibson intimates the propriety of giving it to horses affected with the farcy, mange, and other cutaneous maladies.

Myrrh dissolves almost totally in boiling water: but as the liquor cools, the resinous part subsides; and if the solution is evaporated to an extract, the bitter part of this drug only remains. By distillation with a boiling heat in water, the whole of its flavour arises: partly impregnating the distilled water, and partly collected and concentrated in the form of an essential oil, which is in smell extremely fragrant, and rather more agreeable than the myrrh in substance; in taste remarkably mild, and so ponderous as to sink in water. Two drachms of this oil are obtained from sixteen ounces of the gum; if the gum is very good, three drachms. Rectified spirit dissolves less myrrh than water does; but it extracts more perfectly that in which its bitterness, flavour, and virtue, consist. The spirituous solution contains all the active matter; in distillation nothing is carried away by the spirit, so that the extract obtained from a spirituous solution is a very fragrant, bitter, tenacious resin, and possesses all the virtue of the myrrh.

#### *Tincture of MYRRH.*

Take of Myrrh, bruised, three ounces by weight;

Proof spirit of wine, one pint and a half;

Rectified spirit of wine, half a pint;  
Digest these, with a gentle heat, for eight days, and strain.

## M Y R

This tincture is frequently employed in detergent washes. If one ounce of hepatic aloes is added, it becomes the *Tinctura Myrrhæ cum Aloe*; and is used externally to ulcers as a vulnerary, and is of service in such as are foul and foetid, and require stimulating applications.—The following preparations of myrrh may be deemed proper for veterinary uses:

*The Compound Elixir of MYRRH; now called Compound Tincture of SAVIN.*

Take of Extract of savin, one ounce;

## M Y R

Tincture of castor, one pint;  
Tincture of myrrh, half a pint.  
Digest until the extract is dissolved, and strain.

*Compound Powder of MYRRH.*

Take of Myrrh, in fine powder,  
Calaminaris, prepared, of each half  
an ounce. Mix.

This is merely sprinkled upon an ulcer, which is afterwards dressed superficially, to promote its cicatrification.

## N.

### N A I

**N**o, in prescription is often used to signify the number of things; *Caryophyllorum*, No vi. is six cloves.

**NAG**, in the manege, a horse of a low size. Many nags travel and endure fatigue better than larger horses.

**NAILS.** These seem to be of the same nature as the hoofs of other animals; which are nothing else but a number of small husks, which answer to so many papillæ of the skin. From whence may be concluded, that the nails, in human or brute animals, are nothing but the covers or sheaths of the papillæ pyramidales of the skin on the extremities of the fingers and toes, which dry, harden, and lie upon one another. Their use is to defend the ends of the fingers or paws in opposing any hard and rugged bodies. In some brutes, indeed, they are weapons of offence, as in the cat, &c.

**NAIL**, a small flat pin of iron, by means of which the farrier fastens a horse's shoe to his foot. Mr. MOORCROFT, in his "*Account of the various methods of shoeing horses*," observes, that eight nails for each shoe are enough for saddle and light draught horses; but for such as are employed in heavy draught, ten are required. A smaller number, it is found, do not hold the shoe sufficiently fast; and a greater number, by acting like so many wedges, weaken the hoof, and rather dispose the crust to break off, than give additional security.

### N A I

"The manner of disposing the nails," says he, "has differed considerably at different times. Some writers have directed four to be placed on each side of the foot, and the hindmost near the heel; leaving between the two rows of nails, a considerable space of the forepart of the foot without any.

"The nails thus placed, certainly confined the foot at the sides and heels, left the toe at liberty, and assisted materially the effect of the sloping surface of the common shoe, in altering the form of the foot from a nearly round, to a lengthened figure.

"Latterly, it has been strongly recommended, to place the nails principally at the fore part of the foot, in order to prevent the heels from being confined. And certainly this is a wiser practice than the former; but as the foot should rest on the shoe in the whole extent of the crust, it may be thought, that the best way of connecting them in every part alike, would be that of placing the nails at equal distances from each other, in the whole round of the shoe.

"However, the objection to this is, that when the foot strikes the ground with considerable force, the back part of it becomes a little broader than when it is in the air, or when the foot is at rest. This spreading is not considerable, nor does it extend far along the sides of the foot, but it is sufficient to act upon the



hindmost nails when near the heels; hence arises the necessity for there being a greater distance between the last nail and the heel of the shoe, than between any two nails. Accordingly it may be laid down as a general rule, that the last nail should not be nearer the heel, than from two inches to an inch and a half.

"Such a distance has been found sufficient to prevent the heels being confined; and not sufficiently great to allow the shoe to spring, and loosen the last nails, as frequently happens when they are farther distant from the heel.

"All the nails should be at equal distances from each other, except the two in front, which should be a little wider apart than the rest: this, however, is not a matter of essential consequence; but it is of importance that there should not be any nail in the middle of the toe. For, generally, the action of the foot on the ground has a direct tendency to push the shoe; as it were, backwards along the foot; and it sometimes happens that the shoe is actually thus displaced; in which case it necessarily follows, that the nail in the middle of the toe must be driven immediately against the sensible parts behind it; whilst the rest of the nails in great measure follow the line of the crust, and so avoid doing mischief to the parts within.

"The nail-holes on the upper surface of the shoe should come through the seat, close to the edge of the bevel, that the nails may have a proper and equal hold on every part of the crust, which will be shown by the clenched ends being each equally distant from the shoe.

"As the nail hole is always made with a taper and square-pointed punch, a nail with a head of the same form will fit it better than one of any other shape.

"The most general practice to prevent slipping in frosty weather, is what is called roughing; which is nothing more than making two caulking to each shoe. This is liable to the objections before stated, of throwing the weight too much on the toe, and of the inside caulking sometimes wounding the opposite leg. And it is farther objectionable, because the caulking soon wear down; as, in order that they may take the necessary hold on the ground, they are made sharp and thin. They therefore require being frequently renewed; and hence it generally happens, that a horse which is much worked in frosty weather, has his feet more broken and injured than in the common wear of many months.

"To prevent the necessity of frequent removes, several expedients have been put in practice. Sometimes a few nails, of a larger

size than the rest, have been so put in, that the heads stood considerably beyond the level of the shoe; but when these did not break off, as was often the case, they soon wore down.

"At other times, nails with large heads, tapering to a point, were screwed into the web of the shoe. Of these, one was usually placed at the toe, and one at each heel. And by this contrivance of the screw, it was imagined, that the nails might be easily replaced when worn out. They are apt, however, to break off at the neck, and are too expensive for common use.

"There is, notwithstanding, another plan, which, as far as it has been tried, justifies the author in recommending it.

"This consists in having nails with a lozenge head (see *a*, Plate XVI.), or what may be called a double counterfink, terminating in an edge, instead of coming to a point. This greater breadth of surface, prevents its being rubbed away as fast as a point; the thickness in the middle gives it strength; and the regular taper to the flank, causes it to apply exactly to the sides of the hole in the shoe,—by which it is equally supported, and prevented from bending or breaking. There should be four nails to every shoe, that is to say, two in the forepart, and one at each heel.

"The heads of these nails must be struck in tools, or dies; the four holes in the shoe must be made to correspond with the neck of the nail; and when the nail is driven, the workman must cover the head with a tool, which will receive its upper part, and prevent its being injured by the hammer.

"These nails are, in effect, so many caulking, with the advantages of allowing a more level tread; of being easily replaced, by putting new nails in the old holes; and by being at a distance from the heel of the shoe, they are not so likely to hurt the opposite leg."

The nails and nail-holes employed at the VETERINARY COLLEGE, are very different from those in common use. The latter are stamped with a punch (see *b* in the plate) of a particular form; and the heads being of a conical shape *d*, are received into the nail-holes, so as to preserve their hold as long as the shoe exists. Mr. Spence, No. 7, in the Cloisters, near St. Bartholomew's hospital, is the inventor of these nails; which, though made of a more durable metal, are little more in price than the common sort.

"The head of the common nail," says Mr. PROFESSOR COLEMAN, "is not conical, but nearly square (as at *c*), and no part is received into the nail-hole. When the nail is driven into

the shoe up to the head, the farrier generally continues to hammer with great violence; and as the nail-hole cannot admit the head, the texture of the nail contiguous to the head is shivered, and, in a few days, is broken:—whereas the head of Mr. Spencer's nail operates as a wedge; the more it is hammered the more closely it is connected with the nail-hole, so as to become part of the shoe. Moreover, the head of the common nail, when not injured by the farrier, projects beyond the shoe; and when worn out, the shoe is liable to come off. This accident will more frequently happen if the nails are placed in the old nail-holes of the crust: before the nail-holes of the shoe are punched the farrier should examine the situation of the former nails; and by having new crust for the nails, the shoe will be more firmly connected with the hoof."

**NAILS OF THE BRIDLE HAND**, in the manege. The different position or situation of the nails of the bridle or left hand of a horseman, enables the horse with facility to change hands, and form his departure and stop; since the motion of the bridle follows such a position of the nails. To give a horse head, turn the nails downwards. To turn the horse to the right, turn them upwards, moving the hand to the right. To change to the left, turn the nails down, and bear to the left. To stop the horse, lift up or raise the hand.

**NAPHTHA** (*ναφθα*), the thinnest of the liquid bitumens; it is a perfectly fluid, thin bitumen, or mineral oil, clear and colourless as crystal, of a strong smell, extremely subtle, so light as to swim on all known liquors, spreading to a vast surface on water, exhibiting rainbow colours, and is highly inflammable. This name is given to this kind of oil, whether separated by nature or by art from petroleum or other bituminous matter. Petroleum is a grosser oil of this kind.

**NARCOTICS**, *ναρκωτικά*. Under this term is included all that part of the materia medica, which any way produces sleep; whether called by this name, or *hypnotics*, or *opiates*. To understand the manner of operation of these medicinal simples, and to help us to ascertain their uses in many cases, we should be before-hand rightly apprised of their natures, and ways of acting. And, in order hereunto, it is necessary, besides some other præcognita, to define distinctly what sleep is, or rather (to avoid confusion and dispute about words) what difference there is between an animal body when asleep and when awake.

First then, in sleep there is a cessation from action; and those muscles only are contracted whose action is involuntary, such as those of the heart and breast. So that there is, at this time, a kind of relaxation of the moving fibres of the several members; or, at least, such a quiet position and state of them, by which all the antagonist-muscles are in æquilibrium and not overpowering one another. For this, indeed, seems to be one great design of sleep; to recover to the parts, over-stretched by labour, their former force: and, therefore, all animals do naturally, when composing themselves to rest, put the body into that posture which most favours the particularly wearied limbs, and conduces to this end.

In the next place, there is, in sleep, not only rest, and a suspension from acting of most of the bodily organs, but (in man) of the thinking faculty too: that is, a ceasing from such thoughts, as, when waking, we are exercised about. Thus we may, in short, look upon the time of watching, as the time of wearing out or the destruction of the animal fabric; and the time of sleep as that in which it is repaired and recruited. For, action does necessarily, by degrees, impair the springs and organs: and in motion, something is continually abraded, and struck off from the fibres, which cannot otherwise be restored than by their being at rest from tension. Besides that such a regular and steady course of the blood as has been observed to exist in sleep, is by far the most fit and proper for nutrition, or the restoration of parts which have been consumed or wasted by exertion.

Hence it is plain, that whatsoever can induce such a disposition on the fluids and muscular parts of the body as this, will cause sleep. And, in like manner, when any thing interposes and hinders this composedness and tranquillity, the removing the impediment will be the cause of sleep; inasmuch as this is only reducing the animal economy to its right state, in which, by natural order, there must be a succession of sleeping and waking. Thus it appears, how necessarily continued exercise causes sleep; since this exhausts the nervous power, and consequently that of the muscles.

From hence it appears, that the action of these medicines, and particularly that of opium, is very analogous to that of ardent spirits; only, that a small portion of the former has a force equal to that of a greater quantity of the latter. And this is very evident, in those who accustom themselves to take large doses of



opium; as the Turks and Persians do to that degree that it is no uncommon thing there for a man to eat a drachm or two at a time. The effects of it, in them, are no other than downright drunkenness: upon that account, it is a common saying with them, and on the same occasion, *he has eaten opium*; as with us, *he has drank too much wine*. On maniacal people, however, as is frequently observed, a quadruple dose of an opiate will scarcely produce any considerable effect. But persons so affected will bear the injuries of cold, hunger, &c. and have a prodigious degree of muscular force: which argues a peculiarity in the state of their organs on which we cannot reason.

The most gentle of the tribe of narcotics, in an over-dose, have the known effect on the human body as a poison, and prove certainly destructive. Opium, in too great a quantity, will inflame the stomach, and rarefy the blood to such a degree, that the vessels cannot again recover their tone; whereupon apoplectic symptoms, &c. will ensue. The same obtains in most of the brute creation, though not without some exceptions. Dr. Mead forced into the stomach of a small dog about half a drachm of crude opium, dissolved in boiling water. The animal quickly vomited it up, with a great quantity of frothy spittle; but repeating the trial, by other means, the doctor made him retain three or four doses, intermitting between each about a quarter of an hour. When the dog had thus taken, as near as he could guess, about two drachms, he watched him an hour, when he began to sleep. He presently started up with convulsions, fell into universal tremblings, his head constantly twitched and shook, he breathed short, and with labour; and, at length, lost entirely the use of his hinder-legs, and then of the fore ones, which were stiff and rigid. As he lay snorting, the doctor, to hasten his end, was giving him more of the solution; but, on a sudden, his limbs grew lax, and he died. Upon opening his stomach, it was found wonderfully distended, though empty of every thing but some water and opium, together with a quantity of frothy mucus swimming in it: the inside was as clean as if scraped, and washed from all the slime of the glands, with some redness here and there, as in a beginning inflammation. The pylorus was contracted. The blood-vessels of the brain were full; and he took out a large grume of congealed blood from the upper part of it, upon cutting into the sinus longitudinalis, as is not uncommon in apoplectic cases; but he found

no extravasated serum in the ventricles, nor among any of the membranes.

The exhibition of opium to the horse, however, is not attended with these powerful effects. Nay, it is even denied that opium has any material effect on that animal. See the article **OPIMUM**. Yet it is to be presumed, from the effects of opium on the dog, that many substances under this class are so powerful in their narcotic qualities, as to prove fatal even in very small quantities; and are, therefore, cautiously to be admitted into practice as medical remedies.

**NARES**, the nostrils. See **NOSE**.

**NASAL**, whatever appertains to the nose. See **NOSE**.

**NASALIS**, a muscle which rises fleshy from the extremity of the os nasi, and adjacent parts of the os maxillare, and is inserted into all the cartilages of the ala. It dilates the nostrils. For this muscle in the horse see *l, m, n, o*, Pl. II. and the description of "*Muscles in the Head*," under **ANATOMY of the Horse**.

**NASUM**, **DUCTUS AD**. See **MAXILLA SUPERIOR**.

**NATES**, the buttocks.

**NATES CEREBRI**, a name of two prominences of the brain, which are also called *testes*.

**NATRON**, or mineral fixed alkaline salt. This term has been adopted by the college in their Pharmacopœia: its preparation, or *sal soda*, is therein described, as are also its combinations with the acid of tartar, and with the acid of sulphur; the former is called *natron tartarifatum*, which has been commonly called *sal rupellensis*, or *rochelle salt*; the latter, or its combination with the vitriolic acid, is called *natron vitriolatum*, commonly known by the name of *sal Glauberi* or *Glauber's salt*. With the muriatic acid, it forms common sea-salt or kitchen-salt; called by the college, *natron muriatum*, or *sal muriaticus*. With the nitrous acid, it forms cubic nitre. With the acid of borax, it forms borax; called by the college, *natron boraciatum*. With oil olive, it forms soap, which is directed by the college in preference to the soap formed with the common fixed vegetable alkali or kali. This salt is supposed to be the nitre of the ancients, and is contained in great abundance in the waters of the ocean. In some of the eastern countries, it is said to be found in considerable quantities on the surface of the earth; sometimes pure, but more commonly blended with heterogeneous matter.

**NATURAL FACULTY**, a term denoting

that power in an animal body, which arises from the blood's circulation, which is conspicuous in all the secretions formed within the body, that secretion alone excepted which is made at the origin of the nerves.

**NATURAL FUNCTIONS**, are those which convert the aliment into the substance of the body. These depend upon the strength and vigour of the viscera, vessels, and other parts that receive and elaborate the blood, and perform the necessary secretions.

**NATURE**, that divine power which works unseen in all the various changes which take place in created beings. It is the business of medicine to assist nature, or rather to second her efforts, in restoring the animal functions when impaired by disease or accident.

That the bodies of men and brutes are neither more nor less than an instrument upon which nature performs her various operations, for the purposes for which the machine was created; and that disease is nothing but a defect or imperfection in that instrument, occasioned by some material or mental cause, inherent or accidental, and not by a deficiency of nature; which, universally considered, we take to be an agent of Divine Providence, endowed with limited powers, which she exercises for the formation of bodies, and other particular purposes, in order to promote the ends for which they were ordained:—that she cannot transgress those bounds; and that in herself she is ever perfect, and when any imperfections happen in bodies in the animal, vegetable, or mineral kingdoms, they are owing to some circumstances in which those bodies are placed, or with which they are connected, and not to any defect in nature:—This is nature considered in its most general sense; but when we apply the term to particular bodies, something else seems necessarily included in the definitions respecting and peculiar to those bodies. Thus then, applied to the animal machine, we would say, that by nature are meant the powers inherent in the system, put into and continued in action by the force of the living or vital principle: and when disease occurs, it is owing to some circumstances happening to the solids or fluids of the machine, or to some situation into which they are thrown from whence they cannot perfectly exercise those powers, or feel the impulses of the vital principle; and not to any defects in those powers or that principle.

**NAUSEA**, a term used to express all sorts of sickness, and propensities to vomit, whether called *sickness*, *qualm*, *loathing*, or whatever else. Though, strictly, nausea may be defined to be an

*approach* to sickness, it is such a subversion of the stomach as disturbs its natural easy state.

**NECK**, that part of an animal by which the head becomes connected with the shoulders. This is long in all quadrupeds, in proportion to the length of their legs, or the distance from which they have to reach their food from the ground (see **QUADRUPEDS**). The neck of a horse should be lean, with but little flesh upon it; and to be well-shaped, it should, at its going from the withers, rise with a slope upwards, diminishing by degrees towards the head. In mares, it is a good quality to have their necks somewhat strong, and covered with flesh, because their necks are generally too fine and slender.

*Deer-Necks*, or *cock-throated*, as it is called, are those, in which the flesh that should be next the mane, is set quite below, and next the throat, which renders the neck ill-shaped and ugly.

Mr. St. Bel, describing the defect in the proportion of the neck of the celebrated horse *Eclipse*, says,—“The faults of the neck are in general the consequences of the defects of the head; for it is an uncommon thing to see a short head with a long neck, as, on the contrary, to see a long head with a short neck.

“If the neck is too short, the fault will be an addition to that of a too short head. The case will be the same if the neck is too long; for the head will naturally weigh heavier, in proportion as it is removed from the fulcrum or rest of the lever, supposing it to be well proportioned. Its length [as the author shews in a plate] should be nearly one third of the height of the body, measuring from the withers to the ground. The neck will be well proportioned if it measures one head and a half from the nape to the withers.”

A *swelled neck*, in horses that are unskilfully managed with respect to bleeding, is occasioned by the same causes as produce a swelling of the arm in the human subject; particularly, the subsequent inflammation of the vein, the treatment of which, at the Veterinary College, is described under **BLEEDING**.

For a swelling of the neck or throat, in **SWINE**, which is often dangerous, farriers bleed them under the tongue and tail; after which they apply “a plaster of the yolks of eggs, bees-wax, wheat-flour, and Burgundy pitch; and put coriander seeds and sliced horse-radish into the trough amongst their meat,” which is usually bran and wash given very warm.

**NECROSIS** (*νεκρωσις*, from *νεκρος* dead), that sort of mortification commonly called the



*dry gangrene.* It gradually takes place without much preceding inflammation, the dead part becoming hard and dry.

**NEEDLE-WORMS**, the worms called *ascarides*. See the article **WORMS**.

**NEESING**, the same as **SNEEZING**. See the latter.

**NEIGHING**, the cry of a horse, or mare, usually indicating the sexual propensities.

**NEPHRALGIA**, pain in the kidneys. It is the same as nephritis.

**NEPHRALGIA RHEUMATICA**, the rheumatism in the muscles of the loins. The same as lumbago.

**NEPHRITICS**, those medicines which possess the power of dissolving or breaking down stony concretions in the kidneys or bladder. — The term *nephritic* is derived from *νεφρος*, a kidney, belonging to the kidneys.

**NEPHRITIS** (from *νεφρος*, a kidney), an inflammation in the kidneys. Dr. Cullen places this genus of disease in the class *pyrexia*, and order *phlegmasia*. See **KIDNEY**.

**NEPHROLITHICA ISCHURIA**, suppression of urine from calculi in the kidneys.

**NEPHROPHLEGMATICA ISCHURIA**, suppression of urine, phlegmatic or mucous matter in the kidneys.

**NEPHROPLEGICA ISCHURIA**, suppression of urine from a paralytic state of the kidneys.

**NEPHROPLETHORICA ISCHURIA**, a suppression of urine from a plethora.

**NEPHROPYCA ISCHURIA**, suppression of urine from pus in the kidneys.

**NERVE.** A nerve is a long and small bundle of very fine pipes, or peculiar fibres, wrapped up in the dura and pia mater, which last not only covers them all in common, but also incloses every fibre in particular.

The medullary substance of the brain is the beginning of all the nerves; and it is probable, that each fibre of the nerve answers to a particular part of the brain at one end, and to a particular part of the body at its other end, that, whenever an impression is made upon either of these, there may be an immediate impulse, or sensation produced, denoting that such a part of the body is stimulated.

The nerves do ordinarily accompany the arteries through all parts of the body. They have also blood vessels, as the other parts of the body: these vessels are not only spread upon their coats, but they run also amongst their medullary fibres, as may be seen amongst the fibres of the retina. Wherever any nerve sends out a branch, or receives one from another, or

where two nerves join together, there is generally a ganglion or plexus, either less or more, as may be seen at the beginning of all the nerves of the medulla spinalis, and in other places of the body.

The nerves are divided into those which come immediately out of the skull, and those which come out between the vertebrae. The first sort come from the medulla oblongata, which has been already described (see **MARROW**), and they are ten pairs.

The first pair are the olfactory, which in brutes are a production of the two anterior ventricles of the brain. These, passing through the os cribriforme, are spread in innumerable and almost imperceptible branches all over the thin membrane that lines the inside of the nostrils, and are subservient to the sense of smelling.

The second are the optic nerves, which chiefly contribute to vision. They rise from the thalami nervorum opticorum, pass through the sphenoidal bone, and form the retina in each eye, which membrane is by surgeons reckoned the seat of the gutta serena, viz. that sort of blindness where no visible defect or blemish appears on the eye.

The third pair are distributed to the teguments or coats of the eye, and several of its muscles, whence they are called *motores oculi*.

The fourth pair are spent on the muscles of the eye. By these muscles the passions are chiefly expressed in the several motions they give to the eye, and therefore are usually called the pathetic nerves.

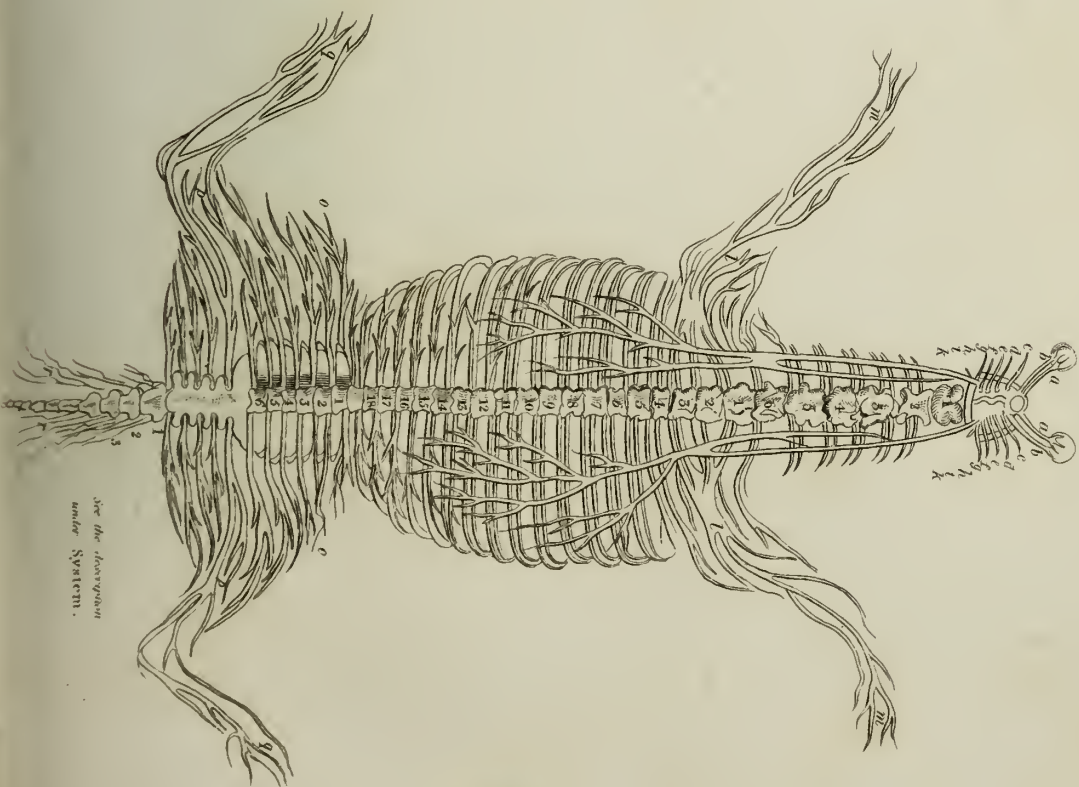
The fifth pair, after piercing the dura mater, divide into three principal branches: the first called the ophthalmic, a great part of it being spent on the fat, on the lachrymal gland, membranes, and eye-lids, with some branches to the membranes of the nose and teguments of the forehead. The second branch gives twigs to the palate and nostrils, to the cheek and upper jaw, and also to the upper teeth, with other small twigs to the orbicular muscles of the eye-lids, nose, and upper lip, where they mix with some twigs of the seventh pair. The third is distributed on the muscles of the cheeks and tongue, the lower jaw, and on both the external and internal parts of the ear. One considerable ramification from this branch enters the canal or sinus of the lower jaw-bone, and gives several twigs to the lower teeth, chin, and under lip.

The sixth pair unite with the ophthalmic branch of the fifth pair; and is spent on that muscle of the eye proper to brutes, called *septimus brutorum*, and likewise on the abducent muscle of the eye.

*View of the Vena Portæ in a Horse.*



*Distribution of the Nerves in a Horse.*



See the description  
under SYSTEM.





The seventh pair, with some branches of the fifth, are displayed on the internal ear, and after they pass through the skull, give branches to the muscles of the tongue and gullet, and detach some external branches to the neck; other branches of this pair are extended to the outward ear, parotid glands, and cheeks, all along to the chin. In man they arise from beneath the annular process of the cerebellum, but in a horse from the medulla oblongata.

The eighth pair are called the *par vagum*, because they are dispersed almost into all parts of the body, their branches being blended and mixed with those of several other nerves. After they pass out of the skull, one branch is spent on the muscles of the shoulder-blade: the principal trunk, taking its course down the neck, near the carotid artery, deals out several branches to the head of the windpipe, and passing into the thorax or chest, it divides into two: the anterior goes to the pericardium, where some of its branches unite with the intercostal, and supply many small branches to the heart, &c.; the posterior branch descends with the gullet, supplies the lungs and stomach with innumerable branches, which is the reason why so many painful symptoms are apt to affect the head, when the stomach of any creature is in the least hurt, or even overcharged. The remaining branches are joined with the intercostals, and pass downwards into the lower belly.

The intercostal takes its beginning from the fifth and sixth pair, and passing out from a large ganglion or knot formed by several branches, which communicate with some of the first spinal nerves, and descending with the carotid arteries, communicates with the cervical nerves that arise from the pith of the neck, and gives branches to some muscles of the head and neck. As it enters the chest from another knot or ganglion it gives out branches, by which the trachea, heart, and lungs, are principally supplied, where its branches again communicate with the eighth or *par vagum*. After this the intercostal runs down by the vertebrae of the chest, where it communicates with the branches sent from between each vertebra; and when it has passed through the midriff it forms another ganglion a little above the kidneys, into which some branches of the eighth pair also enter. From this knot or ganglion proceed the nerves of the guts, liver, spleen, pancreas, and kidneys, &c.

The ninth pair being principally spent on the tongue, are the chief instruments of taste. Other branches of this nerve are dispersed in

the glands and muscles of the upper part of the breast and throat.

The tenth pair, which some have reckoned the first of the cervical nerves, rise from the beginning of the spinal marrow, just as it passes through the skull; and are all spent on the oblique and exterior muscles of the head, except such branches as join the intercostal, with which this pair unites at its first ganglion, and thereby communicate with the other nerves above described.

The nerves that arise from the spinal marrow, after it passes through the skull, are in men thirty in number, but in horses thirty-seven pairs; these we shall but just name, they being in all creatures equal to the number of the vertebrae of the neck, back, loins, and os sacrum. The neck has seven pair, which are dispersed partly on the muscles of the face, partly on the muscles of the neck, and partly on those of the shoulders and fore-legs; which being joined with a branch from the second and fourth, compose that remarkable nerve called the phrenic, which goes to the diaphragm, pericardium, and other parts within the chest.

The first two pair of the seventeen vertebrae of the back, communicate with the lowermost of the neck, sending forth some branches to the neck and shoulders. The second and all the other fifteen pairs, send each of them a branch to the intercostal nerve, by which they communicate with all the nerves of the viscera contained both in the chest and lower-belly; their other branches being chiefly spent on the intercostal muscles which lie between the ribs, as also on the muscles of the back, with some branches that are dispersed on the abdomen.

The nerves that arise from the vertebrae of the loins and os sacrum, are chiefly dispersed on the muscles of the loins, hips, and hind-legs; only that the anterior branches of the first pair of the loins are dispersed all over the fleshy part of the midriff, where they communicate with several of those above described. Some branches are also spent on the psoas muscle, and the posterior branches on the longissimus dorsi; from these also is formed that remarkable nerve called the sciatic, which is the largest both in men and quadrupeds, and is so well known for being the seat of the sciatica or hip-gout; a disease from which, Gibson says, horses are not altogether exempted, having seen some few cases which plainly seemed to be of that kind. The penis of a horse, and the matrix in a mare, are also furnished from the anterior



branches of the loins; and the testicles from the anterior branches of the os sacrum, and from these also many small branches proceed to the tail, which are necessary to its various motions, and may be plainly seen in a horse newly docked, especially when the blood is completely stopped by a ligature.

The nerves, though in their beginnings very small, and of an exceedingly soft texture, yet as they pass on, grow to be very strong and tenacious; and by their communications one with another, form several large trunks and branches, which are proportioned to the parts where they are situated, and which they are destined to serve, in like manner as the muscles are stronger in proportion to the weight they are to move. The latter, indeed, in this respect, correspond with the nerves; for in the limbs, and some other parts where the muscles require a greater supply of nervous influence, the trunks of the nerves are the largest; and where there is a constant and continued motion, the nervous fibrillæ are the most numerous, as in the heart, lungs, stomach, and intestines. Gibson further observes of the nerves, that notwithstanding their distinct origins, yet the whole system is so constituted, that all the nerves communicate more or less one with the other, though we are not in the least able to trace these innumerable and minute connections.

The nerves have an external cover or coat, from the membranes that envelope the brain, and spinal marrow. This has been discovered by injecting fluids of different colours into the blood-vessels; whereby the external surfaces of the nerves are tinged with the colour of the fluid injected into these vessels, and communicated from them to the coats of the nerves; while their internal substance has not been changed, but has remained white. When a nerve is cut through, it seems to have no visible bore or cavity in it, and scarce any moisture, its texture being exquisitely fine and compact; but that they have a moisture, or liquidum nervosum, many anatomists have contended. Nor will this be denied by those who have examined their texture carefully in the body of any animal where they appear in a flaccid state; for this is certainly the case in cartilages and bones, which have their proper juices circulating through them, though this cannot be discerned by the eye. Probably, then, the nerves have also their proper fluids; though the exact texture of their canals, like many other minute parts in the animal machine, can neither be seen by the naked eye, nor even by the help of glasses.

That they are the primary instruments, at least, both of sense and motion, is sufficiently known; whether this property in them proceeds from the passage of a nervous fluid through them, or, as some suppose, from their vibrations, or from both. The structure and disposition of the nerves, which all go off in right angles, and not by circumvolutions and windings like the blood-vessels and lymphatics, seems to favour the doctrine of *vibration*; whatever share the nervous fluid, by its inconceivable subtilty, may also have in these sensations. It must not be concealed, however, that the newly-discovered phenomena of Galvanism have intimated to the minds of some modern physiologists, the possibility that electrical agency may be concerned in the production of muscular motion, &c. by the medium of the nerves. This motion seems to be countenanced by the sudden and immediate impulse whereby all sensations are communicated to the imagination, which cannot be so easily conceived on either of the preceding suppositions.

From what has been said concerning the nerves, and the structure of the several parts of an animal body, we may easily account for all the known sensations, viz. of seeing, hearing, smelling, tasting, and feeling. For there is not the least point throughout the whole animal frame, that is not supplied with an infinite number of small filaments of nerves. By these sight is communicated to the eyes, the moment the visual rays fall upon the retina; smells are perceived as soon as any odoriferous effluvia strike upon the fine membrane that lines the nostrils. Sounds, when impressions are made on the auditory nerves, move the parts of the internal ear, which are wonderfully contrived for that purpose. Taste is also conveyed by the nerves that are dispersed on the tongue, and other fine membranes within the mouth. And as to the sense of feeling, it is the most universal of all others; since no part of the body can be touched in the lightest manner, but we are immediately sensible of it, and the same is more or less observable in all other animals.

**NERVOUS FLUID.** By what means the nerves actually perform their different functions, we are at a loss precisely to point out (see NERVE); but, it is generally believed, they act by a fluid, derived from the medullary part of the brain, and spinal marrow. Dr. Monro says: "That the matter upon which the nervous energy depends is a secreted fluid, we are, indeed, far from being able to prove; but to say that the offices of the nerves are not per-

formed by a secreted fluid, merely because we cannot comprehend how any part of the blood, or any humour prepared from it, could render the mind sensible of an injury, or throw a muscle into action, is, in my opinion, saying a great deal too much: for, in the generation of animals, effects more incomprehensible and astonishing seem to depend on the secretion and mixture of the fluids of the testes and ovaria; the brain, the nerves, the nervous energy, and complex fabric of other organs, being thereby produced."

**NEUROSES** (from *νευρον*, a nerve), nervous diseases. These form a class in Dr. Cullen's Nosology; and, under this title, he comprehends those preternatural affections of sense or motion, which are without fever as a part of the primary disease; and all those which do not depend upon a topical affection of the organs, but upon a more general affection of the nervous system, and of those powers on which sense and motion more especially depend.

**NEUTRAL SALTS.** When any acid and alkaline salt are mixed together, in such proportion that neither of them may prevail, they form by their coalition a new compound, called *neutral*. In all the combinations of this kind (except some of those with vegetable acids), the alkali and acid are so strongly retained by one another, that they are not to be disunited by any degree of fire. How volatile soever the acid were by itself, if combined with a fixed alkali, it proves almost as fixed as the pure alkali. If the alkali be of the volatile kind, the compound proves also volatile; subliming in its whole substance, without any separation of its parts. There are, however, means of procuring this disunion, by the intervention of other bodies. But, in all cases of this kind, only one of the ingredients of the neutral salt can possibly be obtained by itself, the separation of this happening solely in virtue of the superadded body's uniting with the other.

There is another kind of compound salts, formed by the coalition of acids with earthy and metallic bodies. These salts differ from the true neutral ones in several obvious properties: some of them change blue vegetable juices to a green, like alkalies. and others to a red, like acids, while neutral salts make no change in the colour: mixed with boiling milk, they coagulate it, while neutral salts rather prevent its coagulation. From most of them the acid is disunited by fire, without the intervention of any additional matter. But the most distinguishing and universal character of these salts is, that solutions of them, on the addition of

any fixed alkali, grow turbid, and deposit their earth or metal. It were to be wished that custom had appropriated some particular name to the salts of this class; to prevent their being confounded, which several of them have often been, with the perfect neutral salts.

Table of Neutral Salts.

COMMON FIXED ALKALI.	VITRIOLIC ACID.	NITROUS ACID.	MARINE ACID.	ACETOUS ACID.
ALKALI OF SEA SALT.	Vitriolated kali.	Common nitre.	Regenerated sea salt.	Acetated kali.
VOLATILE ALKALI.	Vitriolated natron.	Cubical nitre.	Sea salt.	A salt familiar to acetat. kali.
CALCAREOUS EARTH.	Philosophic sal ammon.	Volatile nitre.	Sal ammoniac.	Aqua ammoniacet.
MAGNESIA.	Selenites.	Calcareous nitre.	Calcareous muriatic salt.	A subastrigent salt.
PURE ALUMINE, OR CLAY.	Vitriolated magnesia.	Purging salts, not distinguished by any particular name.	Altringent salts, not distinguished by any particular name.	
	Alum.			

The preceding table exhibits, at one view, the several compound salts resulting from the union of each of the pure acids with each of the common alkalies and soluble earths; the acids being placed on the top, the alkalies and earths on the left hand, and the compound salts in the respective interfections:—and is thus to be understood. In the upright columns, under each of the acids, are seen the several compound salts resulting from the union of that acid with the respective alkalies and earths on the left side. In the transverse columns, opposite to each particular alkali and earth, are seen the compound salts resulting from the union of that alkali or earth with the respective acids on the top; and, conversely, of each of the compound salts expressed in the table, the component parts are found on the top of the upright column, and on the left side of the transverse column.



in whose intersection that particular salt is placed.

NICKEL, a semi-metal, a genus in the class of metals. It is mineralised by arsenic, sulphur, iron, and copper.

NICKING, an operation performed on a horse's tail, to make him carry it well. See DOCKING, where we have described Mr. Lawrence's operation. Here it may be necessary to enquire how the effect of it, that is, the elevation of the tail, is brought about; and, in order to know this, and judge of the propriety of the operation, we must consider the tail as elevated or lifted up by one set of muscles, and depressed or pulled down by another. The muscles which elevate the tail are more numerous, large, and strong, than those that depress it; they are closely connected to the bones of the tail by fleshy fibres, and terminate in strong tendons at the extremity. But the muscles of the latter soon form into tendinous expansions, and three large tendons which are inserted into the latter bones of the tail; there are several other small tendons which run laterally: the arteries are four, and run sometimes above the bones of the tail, consequently are easily avoided by a dextrous hand, as they cannot readily be wounded by a knife, in dividing the tendons necessary to be cut in this operation. The art of nicking horses then chiefly consists in a transverse division of these depressing tendons of the tail, and such a position afterwards as will keep their extremities from coming again into contact, so that an intervening substance fills up the vacuity. By these means an additional power is given to the antagonist muscles, viz. the elevators; the counteraction of the depressors being manifestly abated by the division of the tendons, and the intervention of the new flesh.

The method of supporting the tail by a pulley and weight is liable to many exceptions; the extremities of the divided tendons not being by that method kept sufficiently asunder, the situation of the tail will rather incline to a perpendicular than a curved direction. This position too is liable to many variations, from the different movements of the horse; and is the reason that the tail frequently inclines to one side, as the nick may heal up faster on one side than the other. The disagreeable situation the horse must stand in with a weight constantly hanging to his tail, is another material objection, besides the necessity of removing it when the horse is exercised or taken out to water.

To remedy these inconveniences, a machine was contrived by Bartlet, which has frequently

been used with success; and, indeed, at first view, appears in every respect calculated to correct the defects of the old method. A description of it, with a plate, is to be found in Bartlet's Gentleman's Farriery. It consists of a kind of saddle or pad, with a groove, to retain the horse's tail in a proper position till the incisions are healed; the tail being turned up on the horse's rump, to which the saddle is secured by straps.

The number of incisions must be in proportion to the length of the tail, but three in general are sufficient. The most universal method of dressing is with powdered rosin; applying a soft doil of lint or tow between each nick, and lapping the tail up with a linen cloth and broad fillet, which, in two or three days, should be cut open down the back part of the tail, and the morning after gently taken off, when it will be proper to plait the hairs in order to keep them clean. Every two or three days the tail should be let down, and dressed with a little tincture of myrrh, which will soon effect a cure.

NICOTIANA, tobacco, a genus in Linnaeus's botany. He enumerates seven species. This plant was brought into France by M. Nicot, a Frenchman, from whom it is called *nicotiana*; he brought it from the island of Tobago (whence the name of *tobacco*), in America. About the year 1650, sir Francis Drake brought it into England; or rather Ralph Lane (perhaps in the fleet commanded by sir Francis Drake), in 1583. The *nicotiana tabacum*, or common tobacco, hath been retained in the College Pharmacopœia. How far this powerful vegetable is capable of being rendered useful in veterinary medicine, remains to be ascertained by experiment. Gibson recommends the fumes of it, by way of clyster, in cases of the colic in horses, and also speaks favourably of it as a topical remedy.

NICTITANS MEMBRANA, the winking membrane, is a thin membrane which several creatures have to cover their eyes with, to shelter them from dust, guard them from thorns, or exclude part of the light when that is too strong; for, in some, it is so thin, that they can see objects through it. See EYE.

NIDUS, a nest, is, in a figurative sense, sometimes used to express the seat of a disease, especially when it is confined to any particular part. The mucus of the intestines is thus said to be a proper *nidus* for worms.

NIGHT-MARE, a malady incident to horses as well as human beings, and proceeding from the like causes. This complaint causes the

horse to sweat more in the night than in the day, and thereby deprives him of his rest. You may discover it by observing him in the morning, whether he sweats on the flanks, neck, and short ribs, which are strong indications of it. For the cure, the tribe of remedies termed *nervous* are probably required, particularly the fetid gums and the bark, preceded by a mercurial purge.

Mr. John Lawrence says, "There can be no doubt that horses are frequently troubled with the *asthma nocturnum*, *incubus*, or *night-mare*: the symptoms of which are those profuse sweats, and twisting and disheveling of the mane, discovered at their uprising in the morning; which the country-fellows of old attributed to the jockeyship and hard post-work of *Oberon* and his queen. The cause is a dense and fizy blood, and intestinal accumulation. It is one of the salutary warnings of beneficent nature, which is not always neglected with impunity." Venesection, purgatives, exercise, and grass, are the remedies he prescribes.

**NIGRITIES OS.** So the ancients called a caries. See **CARIES**.

**NIPPERS**, four teeth in the fore-part of a horse's mouth, two in the upper and two in the lower jaw. They appear between the second and third year. See *AGE of a horse*.

**NIPPERS**, of a smith or farrier, the pincers with which they cut the nails they have driven in before they rivet them, and which they use in taking off a shoe.

**NIPPLE**. In most animals, as in the human, the substance of the mamma is composed of a great number of glands of an oval figure, which lie in a great quantity of fat. Their excretory ducts, as they approach the nipple, join and unite together, till at last they form a number of small pipes, called *tubuli lactiferi*; which have several cross canals, by which they so communicate with one another, that, if any one of them be stopped, the milk brought to it may not stagnate, but pass through by the other tubes, which all terminate in the extremity of the nipple. This part is called in brute animals the *dug*.

**NITRATES**, are salts formed by the combination of nitric acid with the different alkaline, earthy, and metallic bases: there are twenty-six species enumerated in M. Fourcroy's Elements of Natural History and Chemistry.

**NITRE**, or **SALTPETRE**, *kali nitratum*: a salt extracted, in Persia and the East Indies, from certain earths that lie on the sides of hills; and artificially produced, in some parts of Europe, from animal and vegetable matters rotted together (with the addition of lime and ashes),

and exposed for a length of time to the air, without the access of which nitre is never generated. The salt extracted from the earths, &c. by means of water, is purified by colature and crystallisation.

Pure nitre dissolves in about six times its weight of water, and concretes again into colourless transparent crystals; their figure is that of an hexagonal prism, terminated by a pyramid of an equal number of sides. It readily melts in the fire; and, in contact with fuel, deflagrates with a bright flame and considerable noise; after the detonation is over, a large quantity of alkaline salt is found remaining. The taste of nitre is sharp, penetrating, and bitterish, accompanied with a sensation of coldness.

Nitre is a medicine of acknowledged use in many disorders of brute animals. It is therefore material to shew by what processes it may be separated from its impurities, or how its qualities may be improved by new combinations. Of the separation of its acid we have spoken under **ACID**: we shall here confine ourselves to its medicinal forms, the first of which, however, is most in use.

#### 1. Purified Nitre.

Boil nitre in water until it is dissolved; filter the solution through paper, evaporate, and set it to crystallise in a cool place. The liquor which remains after crystallisation may be further evaporated, and set to shoot as before; but this process must not be too long protracted. The usual method of evaporating for crystallisation is, till a pellicle appears; but this direction fails in nitre, for it does not contract a pellicle. Here, when the liquor is become ready for shooting, a little should be taken up in a spoon: as it cools, the salt will begin to shew itself in threads. In this process, the sea-salt is all separated; for it remains dissolved after the greatest part of the nitre hath crystallised. The crystals which shoot after the second evaporation are not totally free from the sea-salt; but the refiners purify it so well, that such as is found in the shops is perfectly fit for veterinary uses. It is given in doses of an ounce or two to horses and other cattle, and is given in smaller quantities by farriers as an alternative or preventive. See the article **MEDICINES**.

To improve the virtue of nitre, it is deflagrated with sulphur; by which a portion of the nitrous acid passes off with the sulphur, and the nitre is thus reckoned less cooling. The process is as follows; and, when finished, the preparation is called,

#### 2. Salt Prunel.

Take two pounds of pure nitre, melt it in a



crucible or an iron pot, then sprinkle into it, by little and little, the flowers of sulphur, waiting each time until the deflagration is over, and then add more, until an ounce hath been thus consumed; then, with an iron ladle, take it out, and cast it into moulds of what shape you please. If the sulphur is in a larger proportion, its effects will be to change the nitre into a different medicine, as is instanced in,

### 3. *Salt Polychrest.*

Take of pure nitre, melt it in an iron pan, and then add, by little and little, an equal weight of the flowers of sulphur, waiting until the deflagration of one portion is over before another is added: when all the sulphur is expended, continue the nitre over the fire for an hour. Thus the acid of nitre and the inflammable principle of the sulphur detonate together, and are dissipated; while the acid of the sulphur, or vitriolic acid, remains combined with the alkaline basis of the nitre. For this salt polychrest, the *vitriolated nitre* is often substituted.

**NITRITES**, are salts formed by the combination of the nitrous acid, *i. e.* with spirit of nitre, containing less oxygen than nitric acid. There are twenty-four species enumerated in M. Fourcroy's Elements of Natural History and Chemistry.

**NITROUS ACID.** See **ACID**.

**NITROUS ETHER**, *SPIRITUS ETHERIS NITROSI*, formerly called *dulcified spirit of nitre*. Two ways of preparing this fluid are directed in our dispensaries, viz.

#### *Lond.*

Take of Rectified spirit of wine, one quart;

Nitrous acid, half a pound.

Mix them, by pouring the nitrous spirit into the other, and distil with a gentle heat, one pound ten ounces.

#### *Edinb.*

Take of Rectified spirit of wine, three pounds;

Nitrous acid, one pound.

Pour the rectified spirit of wine into a large bolt-head, placed in a vessel of cold water, and add by degrees the acid, carefully shaking the vessel; set it in a cool place, lightly stopped, for seven days; afterwards distil the liquor in a water-bath, the receiver being placed in a vessel filled either with water or snow, as long as any spirit arises.

Here the operator must take care not to invert the order of mixing the two liquors, by pouring the vinous spirit into the acid; for, if he should, a violent effervescence and heat will ensue, and the matter be dispersed in

highly noxious red fumes. The method used by Dr. Black is said to be the best. On two ounces of the strong acid he pours, slowly and gradually, about an equal quantity of water; which ley being made to trickle down the sides of the phial, floats on the surface of the acid without mixing with it. He then adds, in the same cautious manner, three ounces of highly rectified spirit of wine, which, in its turn, floats on the surface of the water. By these means the three fluids are kept separate, on account of their specific gravities, and a stratum of water is interposed between the acid and the spirit. The phial is now set in a cool place, the acid gradually ascends, and the spirit descends through the water.

By this method a quantity of nitrous ether is formed, without the danger of producing elastic vapours or explosion.

The liquors mixed together, should be suffered to rest for at least twelve hours, that the fumes may entirely subside, and the union be in some measure completed. The distillation should be performed with a very slow and well-regulated fire; otherwise the vapour will expand with so much force as to burst the vessels.

Nitrous ether has been included in some veterinary prescriptions; but its properties as a remedy in the diseases of brute animals have by no means been elucidated.

**NODULUS**, or **NODUS**, in pharmacy, a knot tied on a rag, including some medicinal ingredient, with which the liquor this nodulus is suspended in is intended to be impregnated. It is also a bag in which the ingredients are included, in order to be suspended in a diet-drink or medicated wine. **Nodus** is sometimes used in the same sense as **gargle**.

**NOLI METANGERE**, touch me not. In surgery, it is a species of ulcer, of the tetterous kind, thus called from its foreness and difficulty to be healed. It is also a kind of wart on the eye-lid, which appears blackish, in which case it presently mortifies.

**NON-NATURALS**, so called because they affect man without entering into his composition, or constituting his nature, but yet are so necessary that he cannot live without them. They seem more properly to merit the appellation *res necessariæ*; as they are things natural in themselves, and to animal existence necessary and unavoidable. They have usually been divided into six, viz.

1. *Air.*
2. *Aliment.*
3. *Exercise and Rest.*
4. *Passions and Affections of the Mind.*

5. *Wakefulness and Sleep.*6. *Repletion and Evacuation.*

But these six might with great propriety be confined to the first four—for exercise and rest produce pretty nearly similar effects to wakefulness and sleep—hence might these not improperly be reduced to one head; allowing something more to exercise than wakefulness, because of the muscular motion employed in the former.

And as for repletion and evacuation, they may be considered in the light of morbid affections; because when profuse on the one hand, or too sparing on the other, they certainly constitute disease; viz. if perspirable matter passes not off as it ought, but is obstructed, plethora, fevers, head-ach, &c. will ensue. If what we eat lies too long on the stomach, indigestion, heart-burn, flatulence, &c. If too great a flux happens from the salivary glands, it constitutes a ptyalism. If from the liver, or pancreas, or intestines—cholera morbus, bilious cholick, looseness, &c. and a variety of others might be adduced to prove the same point.

The luxury of most climes consists very much in the excess of what is needful in its kind, and in the requisites to correct that excess. In hot climes they surfeit themselves with fruits and other vegetables;—they cool their fruits, creams, wines, &c. to an unsalutary degree, with ice, &c. Then, to correct the inconveniences of these excesses, they use brandy, hot tea, high fauces, &c.—In cold climes they indulge in animal diet, fermented liquors, exercise, clothing, &c. for which they use opposites to moderate these excesses, or rather the inconveniences produced.

Very few disorders happen to the human frame, in which an error in one or more of the non-naturals has not some influence as a cause; and we may confidently say, that this is also the case with that class of animals which fall under the observation of the veterinary practitioner. To his good sense we leave the application of what has been advanced on the subject of the *Non-naturals*, as they relate to human medicine.

**NOSE**, the organ of smell in animals. Considering this part anatomically, it may be divided into two parts; the external, and the internal. The external part is covered with the skin, and some muscles. Its upper part consists of two bones, joined together on their upper side. Its lower part is made of four cartilages, of which the first two are fixed to the lower ends of the aforesaid bones; they are also joined together on the upper side. In the horse, and other large quadrupeds, they are broad and

spreading, and, as they descend, they grow thinner and softer. The other two lie upon the lower ends of the first two, to which they are connected by a membrane; these are called *Alæ Narium*, or *Nostrils*. The cavity made by these bones and cartilages is divided in its middle by a partition, of which the upper end is bony, and the lower end cartilaginous. The fleshy extremity of this cartilage is called *Columna*. The upper part of each side of this cavity divides into two, of which one goes up to the *os spongiosum*, the other goes down into the fauces, and opens behind the palate, by which means breathing is performed through the nostrils. At the lower end of this cavity there are two small holes, which pierce the bone of the palate, and open in one behind the *dentes incisivi*: these convey the thin discharges of the nostrils into the mouth. The cavity is covered by a pretty thick and glandulous membrane; its glands separate that matter, which we call *mucus*, in the nostrils. On the lower end of this membrane grow several hairs, calculated to stop any extraneous matters from ascending too far into the nostrils.

By the internal part of the nose, is understood the immediate organ of smelling. It lies in the upper part of the cavity of the nostrils. It is made of the *os cribriforme*, and its productions, the *os spongiosum*, of which each lamina is covered with a very fine membrane, upon which the fibres of the olfactory nerve, which pass the holes of the *os cribriforme*, and the fibres of the first branch of the fifth pair which come from the orbit, are spread. In this membrane there are many small glands, which separate an humour that moistens it, and stops the exhalations of odoriferous bodies, which make their impressions upon the olfactory nerves that are spread upon it. Hounds, and other beasts, which have a more exquisite smell than men, have also many more laminae covered with such a membrane. There are several conduits which open between these laminae. The first and second are the *ductus lachrymales*. The third and fourth come from the *sinus frontalis*. The fifth and sixth come from the nut of the second bone of the upper jaw. The seventh and eighth come from the cells of the *os spongiosum*; they pierce the membrane which covers the first or uppermost lamina: and the ninth and tenth come from the sinus in the *os sphenoides*. All these conduits carry the liquor, which is separated in their cavities, into the nostrils, for the moistening its membranes, which would otherwise dry too much by the air breathed through the nostrils.



The nose has four pair of muscles, that widen and contract the nostrils, which arise from the upper jaw and from under the eyes, and are all of them inserted into the cartilages of the nostrils, and part of the upper lip. The action of the muscles of the nose is most perceivable, when horses are extremely heated with exercise, in broken-winded horses, and in all kinds of fevers, where the nostrils open and shut more or less, in proportion as a horse happens to be more or less oppressed with his distemper; and as some of the muscles of the lips act also in concert with those of the nose, therefore, in very extreme cases, the upper lip is also drawn upwards in all the workings of the nostrils.

The vessels of the nose are arteries from the carotids, which pass with the olfactory nerve, and they are distributed into the internal nose. The external carotid, the jugular, and the second branch of the fifth pair, give arteries, veins, and nerves, to the external nose. The diseases of this part in the horse are not characterised by any thing very singular, if we except the affection termed glanders. See GLANDERS.

Gibson says, that horses are, however, sometimes subject to other maladies, particularly what farriers call the *canker* in the nose, which comes the nearest to that which in man is called the *ozæna*. "Some few of these cases," says he, "have fallen in my way; they discharge a sanious matter, and the ulcer looks black, like an eschar made with a caustic. The way to cure this canker is to purge, and give antimony inwardly, and apply pledgets of lint or tow to the part, dipped in a mixture of honey of roses, mel *Ægyptiacum*, and tincture of myrrh, equal quantities, which should be thrust up with a probe, and renewed as often as they drop out. This sort of ulcer is seldom attended with a swelling of the glands, unless it be neglected, in which case it may indeed end in the glanders. If it is occasioned by the stinging of a wasp or fly, which sometimes happens at grass, syringe the horse's nostril with a mixture of spirit of wine and vinegar, of each equal quantities, with the addition of a little alum, and half a spoonful of honey.

"Sometimes we also meet with a *polypus* in the inside of a horse's nose, though this happens but seldom. This is a fleshy substance of a dark yellow or red colour, with one or more roots that fasten it to the pituitary membrane. I never saw but one, which I extracted from a horse's nose, that was just taken up from grass. The thickest part of it was about three quarters of an inch in diameter. I drew it out with my

finger and thumb, without an instrument, and found it had two roots, one pretty large and the other small. The part bled pretty much for two or three days, while the milder applications were used, but it was soon cured with this injection."

Take of Spirit of wine,  
Vinegar, of each four ounces;  
Vitriolated zinc, two drachms;  
*Ægyptiacum*, one drachm;  
Honey, two ounces. Mix.

This was injected once a-day for about ten or twelve days. Gibson observes that the roots of polypi are apt to leave ulcers, which continue running many years like the glanders, but without being infectious.

By the same writer an account is given of a cancerous wart in the nose of a horse. For this, see the article CANCER.

NOSE-BAND, or MUSEROLE, that part of a headstall of a bridle that comes over a horse's nose.

NOSOLOGY (from *νοσος*, a *disease*, and *λογος*, a *discourse*); an explication of diseases, or a discourse concerning the nature and properties of them, dividing them into classes, orders, genera, species, and varieties; by which means accurate distinctions are formed, and much confusion avoided. The chief works on this subject are Sauvage's *Nosologia Methodica*; Cullen's *Synopsis Nosologiæ Methodicæ*; with those of Vogel, Linnæus, Sagar, and Macbride, on the same subject.

NOSTRILS. In a horse, these should be large and extended, so that the red within them may be perceived, especially when he sneezes. It is a common opinion, that the width of the nostrils contributes to the easiness of breathing, but this is ill founded. See NOSE.

NOTHÆ COSTÆ (from *νοθος*, *spurious*), the spurious ribs.

NOTHUS (*νοθος*, *spurious*, *counterfeit*, or *bastard*). Thus peripneumonia *notha*, the *bastard* peripneumony, is a disease of the lungs in which either all the peripneumonic symptoms do not exist, or they are conjoined with others not belonging to a true inflammation of the substance of the lungs.

NUCHA, an Arabic term, signifying the hind part or nape of the neck; properly the region upon the first vertebra of the back in the human subject.

NUTRITUM, a useful ointment as an external dressing for sores. It is made thus: Melt half a pound of common litharge plaster (*Diachylon*), adding gradually twelve ounces of

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common oil. When these have been incorporated, and are sufficiently cooled, stir in, by little and little, four ounces of vinegar.

**NUCLEUS**, signifies properly the kernel of a nut; whence, in a figurative sense, enucleate is used to express unfolding or explaining any thing to its most remote difficulties or abstrusities. The centre or original point, or foreign body, which seems to have laid the foundation of urinary and other calculi, has also been called the *nucleus*.

**NUT**, a name given to the glans penis of a male animal, from its supposed general resemblance. A bone in the horse's foot is also so called.

**NUTRITION**, the natural process by which an animal's strength is supported and its growth increased. See the articles **CHYLE**, **FOOD**, **STOMACH**, &c.

**NUX VOMICA**, a flat roundish seed or kernel, about an inch broad and a quarter of an inch thick, with a prominence in the middle, on both sides of a grey colour, covered with a kind of woolly matter, internally hard and tough,

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like horn. It is the fruit of the *Strychnos nuxvomica*, vel *Indica*, foliis ovatis quinque nervis, cauli interni; Class **PENTANDRIA**; Ord. **MONOGYNIA**; Linn. Gen. Plant. 253. Fallopius says, in doses to ʒss. they procure sweat; but Hoffmann informs us, that two doses of *seven or eight grains* each were fatal to a girl of ten years old. They poison dogs, crows, &c. In men, they produce great anxiety, convulsions, paralytic symptoms, retching, an increased motion of the heart and lungs. The poisonous matter is probably the same as that of bitter almonds, which acts chiefly on the nervous system. Dr. Hagstrom, a Swedish physician, commends the usefulness of the *nux vomica* in the dysentery. However dangerous they appear to be as medicines in human diseases, their properties deserve to be ascertained by the veterinary practitioner; for it is amongst the most active substances in the *materia medica* that we are to search, if we would find remedies for those diseases of horses and other cattle which are at present an opprobrium to the art.

## O.

## O A T

**OATS**, a well-known grain, the seed of the *Avena sativa*, Linn. They constitute a material part of the diet of horses. See the article **FOOD**.

Gibson reckons them to be of a middle nature between wheat and barley. They agree well, and are so generally palatable to horses, that he never knew even a foreign horse, that had been used to barley and other kinds of grain, refuse to eat them. Yet many of our horses will not relish barley, unless it be scalded, or they are first suffered to be very hungry, and even then they do not care to eat it. "Oats," says he, "are cleansing and opening, and our horses seldom receive any damage from them, unless given with too liberal a hand, and then they are looked upon to be heating. Besides, when horses have too many oats given them, they are apt to eat little or no hay. But

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this seldom happens, except where hay is scarce, or not good of its kind, and oats are plentiful; but horses that eat little hay and many oats, though their flesh is generally firm, yet they seldom carry any belly, and, if they have not a good deal of exercise, are apt to fall into fevers.

"The oats are generally good all over England, but are best in the north parts; for they thrive most in cold moorish grounds, and in some countries are their chief product. Those that have a thin shell and not large and husky, feel heavy in hand, and rattle when poured into the measure, are the best. The ship oats that come to Bear-Key are chiefly from the northern counties, but are sometimes musty and unwholesome, and lose their whiteness by the water-carriage; but when they are put into dry granaries or dry lofts, and spread out on the floors, and often turned and sifted, they fre-



quently recover their sweetness, and may be given with safety; yet I should always prefer the freshest and newest oats, especially to fine horses, though they may be worse in kind; and where they abound in husk there needs no more than to increase the allowance. Some prefer the black oats to the white, but I believe the difference is but small, only that in some places the black are more firm and hard than the white, and have a thinner shell, and in those places they generally sow a superior number of black oats among the white, though the white that grow up with them are not much, if at all, inferior to the other, which shews the difference lies chiefly in the goodness of the feed and the fitness of the soil."

**OATGRASS.** The different oatgrasses are species of *avena*, or of *bromus*. See **GRASS**.

**OBESITY** (from *obesus*, corpulence, or fatness). See **FATTENING**.

**OBEY**, in the manege. A horse is said to *obey* the hand and heels, to *obey* the aids or helps, when he knows and answers them.

**OBLIQUUS**, a name for several pairs of muscles, *viz.*

1. *Obliquus Ascendens*. This arises, in the human subject, from the spine of the ilium, the whole length between the posterior and superior anterior spinous process, from the os sacrum, and the three undermost lumbar vertebrae, by a tendon common to it, and to the serratus posterior inferior muscle; from Poupart's ligament, at the middle of which it sends off the beginning of the cremaster muscle; and the spermatic chord in the male, or round ligament of the womb, passes under its thin edge, except a few detached fibres. It is inserted into the cartilago ensiformis, into the cartilages of the seventh and those of all the false ribs; but at the upper part it is extremely thin, resembling a cellular membrane, and only becomes fleshy at the cartilage of the tenth rib: here its tendon divides into two layers; the anterior layer, with a great portion of the inferior part of the posterior layer, joins the tendon of the external oblique, and runs over the rectus, to be inserted into the whole length of the linea alba. The posterior layer joins the tendon of the transversalis muscle, as low as half way between the umbilicus and os pubis; but, below this place, only a few fibres of the posterior layer are seen, and the rest of it passes before the rectus muscle, and is inserted into the linea alba; so that the whole tendon of the external oblique muscle, with the anterior layer of the internal oblique, passes before the rectus muscle; and the whole posterior layer of the

internal oblique, together with the whole tendon of the transversalis muscle, excepting at the inferior part, passes behind the rectus, and is inserted into the linea alba. At its undermost part it is inserted into the fore-part of the os pubis. This muscle has also the name of *internus*. Its use is to assist the *obliquus descendens*: but it bends the trunk in the reverse direction.

2. *Obliquus descendens*. It arises by eight heads from the lower edges of an equal number of inferior ribs, at a little distance from their cartilages: it always intermixes, in a serrated manner, with portions of the serratus major anticus, and generally coheres to the pectoralis major, intercostalis, and latissimus dorsi; which last covers the edge of a portion of it extended from the last rib to the spine of the os ilium; from these origins, the fibres run down obliquely forwards, and terminate in a thin broad tendon, whose fibres are continued in the same direction. It is inserted into the whole length of the linea alba, becomes thicker towards the lower part of the abdomen, and is perforated in the middle by the umbilicus. On the outside of the rectus muscle, the tendon of the external oblique appears whiter than elsewhere, by its being there connected with the tendons of the internal oblique and transverse muscles; so that this part has been called *Linea Semilunaris*, from its curved shape. The under part of the tendon divides into two columns, which leaves an oval space between them, named the ring of the external oblique muscle, for the passing of the spermatic chord in the male, or round ligament of the womb. The anterior superior column passes over the cartilage between the ossa pubis, and is fixed to the opposite os pubis; the other is fixed to the os pubis of the same side. It is also inserted, tendinous and fleshy, into the middle of the spine of the ilium. From that part, which is named its anterior superior spinous process, it is stretched tendinous to the os pubis, and is named Poupart's or Fallopius's ligament. From this ligament it sends a tendinous layer, which is lost in the membranous fascia of the thigh.

Its use is to support and compress the peritonæum and abdomen, to assist the evacuation of the feces and urine, and likewise in the exclusion of the foetus; it thrusts the diaphragm upwards, and draws down the ribs in expiration; it bends the body obliquely when the ribs are fixed, and raises the pelvis obliquely. The obliquus descendens is also called *obliquus externus*.

3. *Obliquus inferior*, is a muscle of the head,

arising fleshy from the external part of the spinal process of the second vertebra of the neck, close by the origination of the rectus major; and, being dilated into a fleshy belly, passes obliquely to its insertion at the transverse process of the first, where the former muscle begins. When this acts on either side, the transverse process of the first vertebra of the neck is moved towards the spine of the second; which has given occasion to some to reckon it amongst the muscles of the neck.

4. *Obliquus superior*, is a muscle of the head, which arises fleshy from the back part of the transverse process of the first vertebra of the neck, and in its somewhat oblique ascent, it becomes a fleshy belly, and, lessening itself again, is inserted into the os occipitis, laterally. By this (together with its partner, they never acting separately) the head is moved backwards on the first vertebra.

To the eye, nose, and eye-brows, also belong various oblique muscles. For the foregoing in the horse, see Plates II. III. X. XI. and XIII. with the descriptions under the several articles to which they are connected.

**OBSERVATION**, in medicine, is very important to its progress and improvement. It is required of the observer to give an accurate history of the disease with regard to its causes, nature, and effects; to give an exact account of the several things which appeared either beneficial or disadvantageous, when the case is either left to nature, or treated by the rules of art; and, lastly, he ought to give the phenomena which present themselves upon dissection of the body, if the disease proves mortal.

**OBSTETRICS**, that branch of medicine which belongs to midwifery. So competent is nature, for the most part, to the act of parturition in brute animals, that few opportunities occur in which manual assistance is necessary. It is required, however, in some instances absolutely; and therefore it behoves the enlightened veterinarian to include this branch among his general qualifications.

Although the *minutiae* of this art need not be attended to, yet it is necessary to know, 1. The parts of the pelvis in the different species of larger cattle, its dimensions, the depth of its cavity, &c. 2. The parts subservient to generation. 3. The structure of the womb and its neck, and its state in the different periods of gestation. 4. The progress of the young animal through the different parts of the pelvis in a natural labour. 5. The management of the secundines. 6. The difference betwixt false and true labour pains. 7. The dif-

ferent kinds of labour. 8. The various modes of the fœtus presenting, with the methods of delivery. 9. The disorders consequent on parturition. See the articles PELVIS, PRESENTATION, &c.

So little has this subject been attended to, and so scanty are the materials from which we are left to draw our information, that we scarcely need to apologise for the deficiencies observable in this article.

Mr. John Lawrence, in treating on "*Veterinary obstetrics*," says we need not be at a loss, as analogy is a sufficient guide. "Cows," says he, "particularly the northern short-horned species, often need the assistance of the accoucheur. The natural presentation of the calf is with its head and fore-feet, the nose between the feet, and the back upwards."

Mr. Downing, a modern writer on this subject, supplies Mr. Lawrence with the following practical remarks. That author enumerates seven preternatural positions: namely,

- 1st. The reverse presentation, or tail first.
- 2dly. The fore-feet, no head appearing.
- 3dly. Sideways, the belly being upwards, the head reversed over one shoulder, and the legs appearing.
- 4th. The fore-feet, with the head under the brisket.
- 5th. The head, either alone, or with one fore-leg only.
- 6th. The head and one leg, or the head alone.
- 7th. The calf lying on its back, its four legs folded nearly together, and close up to the cow's spine, the head appearing, or doubled back, even with the ribs, on either side; one hind-leg, perhaps, presenting.

As general rules in these cases, the author lays down the following. He recommends the procuring timely assistance, before the cow is exhausted. Extraction, he says, is never to be attempted but in a proper position. The operator should supple his hand and arm with warm water and fresh lard. Examination is best made when the cow is standing, and in the intervals of the labour pains. In pulling at the feet, he says, it is proper to inclose the claws in the hand, that these may not bruise the cow in passing along. He reckons the navel string bursting, and the attendant flux of blood, of no consequence. Instruments he thinks should be used only in the last extremity, and only by experienced persons. The proper hook, by which to assist in extracting the fœtus, is of iron, and four inches long, with a loop for a cord at the straight end.



"In a *natural position*, if the cow should want help, the position of the calf may be ascertained after the waters have been seen. A cord ought to be in readiness, to attach to the fore-legs of the calf, in order to assist in each natural exertion. The head ought to be kept clear of obstruction."

In the *preternatural position*,

No. 1. (see above.)—"No attempt should be made to turn the calf (this position being favourable for extraction), but we should use expedition, for fear of its being suffocated. Press the haunches back with the palm of the hand, take hold of the bend of the hock of one leg, pull at it, and reach the foot; both feet may thus be brought forth."

No. 2. "Reduce the head to its proper situation, between the fore-legs, either by hold of the nose or jaw-bone. A long arm is needful, which must be kept to the full extent in the body, that instant advantage may be taken of every labour-pain, the fingers being properly fixed."

No. 3. "Gently move the calf back, and bring the head forth to the legs."

No. 4. "Push the calf back to find the head; pull at the nose: this requires address, but it is useless to employ force until the head be in its proper place."

No. 5, and 6. "Push the calf back against the shoulders and brisket; the feet will be found folded under the belly; bring the feet forward, one at a time, the hand being gently placed on the bend of the knee. Should the head be too much swelled and bruised to be returned, it must be skinned and amputated. Dissect in a straight line, from the poll to the nose; force the skin back over the first joint of the neck; divide the head from the body, pushing the latter back to obtain hold of the knees. The loose skin must be previously wrapped over the ragged bone, and an assistant should have fast hold, in order to guide it clear of the haunch-bones of the cow; should it hitch there, put it back instantly."

No. 7. "If one hind-leg appear, put it back; the calf cannot be brought with a hinder and fore-leg together, and the difference between the knee and hock will be immediately discovered. The head being doubled back, must of course be reduced to its proper place. The cow being strong and quiet, the business may be effected with care and patience; but should the hook be positively necessary, hold must be taken, either in the sockets of the eyes, cavity of the ears, or in the jaw. Keep steady until fair hold be

taken." In case of difficulty occasioned by *dropfy* in the calf, which will be sufficiently apparent from its preternatural size, we are directed to use the knife carefully, and with it to pierce the belly of the calf, by which means the delivery may afterwards be effected. The cow is much subject to *abortion*, as has been noticed under the article Bos.

In *suckling*, the common error of the nursery universally prevails, it seems, in the calf-pen. Calves are either allowed too much milk, or their stomachs are loaded with too great a quantity at a time. Hence their digestive faculty is overpowered, their growth is impeded, and a state of disease induced, the most common symptoms of which are, alternate purging and costiveness. Twice a-day, Mr. Lawrence apprehends, is too seldom, and it would probably pay the extra trouble to suckle three times. "The calf kept so many hours from the teat, often in winter-time sixteen, greedily swallows an immense quantity of milk, sinks down to sleep, wakes with the disagreeable consequences of an overloaded stomach, belching up a scalding acid liquor, and remains restless and bleating for a fresh supply, and a repetition of the error. Many people milk the cow first, which is a bad practice; the last milk being the richest, and not so proper for the calf. We have here the reasons for the frequent founess of veal, and for its producing curds and whey, instead of rich and wholesome gravy."

To obviate *costiveness in calves*, we are advised to take the chalk, usually given them, away; and to administer half an ounce or an ounce of magnesia, with some aniseeds in powder, in a pint of warm gruel. This, the author says, may be given occasionally; or, instead of it, rhubarb and magnesia in equal quantities.

On the subject of *purging in the calf*, Mr. Lawrence differs totally from Mr. Downing, who advises the free use of astringents, such as chalk, pomegranate, bole, and alum, to the amount of four or five ounces for a dose. In lieu of this, Mr. Lawrence recommends a dose of rhubarb, with a table spoonful or two of peppermint water, given in warm ale. Afterwards, if necessary, two drachms of diacordium, in ale, for two or three days, with rice gruel. "This failing to have an immediate good effect," says he, "the butcher's knife is the most *profitable* remedy."

OBSTIPATION, costiveness. See COSTIVENESS.

OBSTRUCTION, signifies the blocking up of any canal in an animal body, so as to pre-

vent the flowing of any fluid through it, on account of the increased bulk of that fluid, in proportion to the diameter of the vessel.

**OBSTRUENTS**, are such things as obstruct the passages.

**OBTUNDENTS**, medicines which lessen the acrimony of the humours.

**OBTURATOR EXTERNUS**, also called **MARSUPIALIS**. This muscle covers the foramen magnum ischii, and, rising from the bone before the foramen, runs backward under the head of the os femoris, covered by the quadratus femoris, and is inserted into the trochanter major, contiguous to the internus, and is, like it, a rotator.

**OBTURATOR INTERNUS**, or **MARSUPIALIS**. This muscle takes its origin from the inner circumference of the foramen magnum ischii, and goes out playing round the ischium as on a pulley, and is inserted into the trochanter major, contiguous to the pyriformis, and is a rotator of the thigh. This and the foregoing muscle in the horse are shewn in Plate XV. See also the description of Muscles in the "*lower limbs*," under the article **HORSE**.

**OBTURATOR NERVUS**. This nerve is a branch of the crural: it passes through the foramen ovale, and is lost in the inner muscles of the thigh.

**OBTURATRIX ARTERIA**. It is a branch of the hypogastric. It perforates the obturator muscle, whence its name. It goes out of the pelvis at the upper part of the ligament of the foramen ovale, and sends out various branches about the neck of the thigh bone. This vessel in the horse is shewn in Plate XI. See the article **HORSE**; description of Muscles, &c. in the "*right lower limb*."

**OBTURATRIX VENA**. It is a branch from the hypogastric vein, and receives this name when it enters into the internal obturator muscle.

**OCCIPITALIS**, and its partner, in the human subject, are short, but broad, thin, fleshy, muscles, situated on the occiput, from whence they derive their names. When they act, they pull the hairy scalp backwards.

**OCCIPITALIS ARTERIA**, the first external or posterior branch of the external carotid. It passes obliquely before the internal jugular vein, and having sent out twigs to the adjacent muscles, it runs between the styloid and mastoid apophyses, along the mastoid groove, and goes to the muscles and integuments which cover the occipital bone. It communicates with the temporal, vertebral, and cervical arteries.

**OCCIPITALIS NERVUS**, a branch from the tenth pair of nerves which proceed from within the skull: they run on the upper and lateral parts of the head.

**OCCIPITALIS POSTERIOR ARTERIA**. It is a branch from the vertebral. It spreads on the occiput.

**OCCIPITALIS VENA**, a branch from the posterior or upper external jugular, but it sometimes proceeds from the vertebralis, or axillaris. It spreads on the occiput.

**OCCIPITO-FRONTALIS**, from the occiput and the skin of the os frontis. Albinus calls this muscle Epicranium. It rises from the posterior part of the occiput, goes over the upper part of the os parietale and os frontis, and is lost in the eye-brows. It is a very thin muscle; its office is to raise the eye-brows and wrinkle the forehead.

**OCCIPUT**, the hinder part of the skull. See **CRANIUM**.

**OCULIST**, one who professes to cure distempers of the eyes.

**ODONTALGIA** (*οδονταλγια*, from *οδεις*, a tooth, and *αλγος*, pain), the toothach.

**ODORIFEROUS GLANDULES**. These, in the human subject, are about the pudenda, arm-pits, &c. They are of the same kind as the sebaceous glands.

**OECONOMY** (from *οικος*, *domus*, a house, and *νομω*, *distribuo*, to distribute), is strictly the management of family concerns; but, in a figurative sense, is frequently extended, among other things, to the mechanism and functions of the human body: so that animal œconomy includes all that concerns the animal structure in a state of health.

**OEDEMA** (*οιδημα*, from *οιδεω*, *tumeo*, to swell), signifies properly any tumour; but it is now most commonly, by surgeons, confined to a white, soft, insensible tumour, proceeding from cold and aqueous humours, such as happen to hydropic constitutions.

**OENANTHE**, drop-wort, or water-wort, a genus in Linnæus's botany.

**OENANTHE CROCATA**, hemlock drop-wort.

**OENANTHE AQUATICA**, water drop-wort.

**ŒSOPHAGUS** (*αισοφαγος*), the gullet; which is a long, large, and round canal, that descends from the mouth, lying all along between the windpipe and the joints of the neck and back, to the fifth joint of the back, where it turns a little to the right, and gives way to the descending artery; and both run by one another, till, at the ninth, the œsophagus turns



again to the left, climbs over the aorta, and descending above it, it pierces the diaphragm, and is continued to the left orifice of the stomach.

The gullet in most animals, as in the human, is composed of three coats. The first and outermost is only a common membranous integument, which seems to be a continuation of the pleura. The second is thick and fleshy, and consists of two orders of muscular fibres, longitudinal and circular, the first covering the last; these thrust the aliments down into the stomach. In brutes, because the situation of the neck conduces little to the descent of the aliments, therefore, these fibres run in two close spiral lines, which cross one another: but in men, whose position is erect, the very gravity of the aliments helps their descent. The third and last lines the cavity of the gullet. It is composed of white and slender fibres, variously interwoven. At its upper end, it is continued to the membrane that covers the mouth and lips; therefore, in vomiting, these parts are affected. Its lower end covers the left orifice of the stomach two or three fingers breadth. The surface of this membrane is besmeared with a soft and slimy substance, which probably comes from some small glands, that lie between this coat and the second. The upper end of the gullet is called pharynx. It has two pairs of muscles for its motion; the first is the stylopharyngeus: this is a small and round muscle, which arises fleshy from the root of the processus styloides, and, descending obliquely, it is inserted into the sides of the pharynx. When this muscle acts, it pulls up and dilates the pharynx, in deglutition. The second is the oesophagus. Its fibres have several directions; its superior fibres arise from the processus pterygoideus of the os sphenoides, and from the cornua of the os hyoides, and run obliquely to the back part of the pharynx. The fibres, which are below these, arise from the sides of the cartilago scutiformis, and run transversely to the middle of the back part of the pharynx, where both superior and inferior fibres, from both sides, unite and form a tendinous line. When this muscle acts, it draws the back part of the pharynx to its fore-part; by which it not only straitens it for the depressing of the aliment, but it compresses also the tonsillæ: these send out a liquor, which lubricates the aliment, whereby it glides more easily down into the stomach. There are two lymphatic or vesicular glands, which are placed on the back part of the gullet. They are like two beans tied together. They receive veins and arteries from the coro-

nares, and they have lymphatic vessels which discharge themselves into the thoracic duct.

The gullet, at its upper end, receives an artery from the aorta, and it sends a vein to the azygos: at its lower end it has an artery from the cœliaca, and it gives a vein to the coronaria of the stomach. Its nerves are from the eighth pair. The use of the gullet is to carry the meat from the mouth into the stomach, by means of the muscles of the pharynx and fleshy fibres of the gula, which perform its peristaltic motion.

**OFFICINAL** (from *officina*, a shop), any thing that is used in, or belonging to, a shop. Thus officinal plants and drugs are those used in the shops.

**OILS**, a class of fluid medicinal substances, obtained, either by distillation or pressure, from the bodies which contain them.

1. Vegetable and animal matters, and mineral bitumens, on being urged with a red heat, have their original properties destroyed, and are resolved or changed into products of a different nature from what pre-existed in the subject. By burning them in the open air, a part is changed into ashes, a part into soot, and a part is dissolved by the air. Exposed to the fire in close vessels (as in those called retorts, having receivers adapted to them for detaining the volatile parts), they are resolved into fetid oils, and different kinds of saline substances, which rise into the receiver; and a black coal, which remains behind, and which, though no further alterable in close vessels, on admitting air, burns into white ashes. Some of the oils, called, from their fetid burnt smell, empyreumatic, and employed as veterinary remedies, are the following. They are seldom employed any otherwise than for external purposes, as the cleansing of foul ulcers, against some kinds of cutaneous eruptions, old rheumatic pains, &c.

#### *Oil of Tar.*

Take of Petroleum a sufficient quantity, and distil in a sand-bath.

This oil will be more or less thin, according to the continuance of the distillation; and the tar will at last be reduced to a black coal, and then the oil will be pretty deep in colour, though perfectly fluid. This oil is acid and not stimulating.

#### *Animal Oil.*

Take of Oil of hartshorn, one pound.

Distil three times.

Or,

Take of Empyreumatic oil, recently distilled from the horns of animals, as much as you will.

Distil from a matrafs furnished with a head, as long as a thin colourless oil comes over, which is to be freed from alkaline salt and spirit, by means of water. In order to preserve this oil limpid and good, it ought to be put in small phials completely filled and inverted, having previously put into each phial a few drops of water, that on inverting them, the water may interpose betwixt the oil and mouth of the phial.

The quantity of oil employed in this process should be considerable: for it leaves so much black matter behind in the several distillations, that it is reduced, at last, to a small portion of its original quantity. The distillation must be repeated, at least, twelve times; and frequently the requisite subtilisation will scarcely be obtained with less than twenty distillations. It is said, that the effect may be expedited, by mixing the oil with quick lime into a soft paste; the lime keeping down more of the gross matter, than would remain without such an addition.

Model, of Petersburg, took some pains to reduce the expence attending the repeated distillations of this oil, in order to render it pure. He directed the foetid oil to be poured into a glass cucurbit, with an alembic head, so as not to foul the side of the vessel; and distilled with a gentle heat, separating, by change of the receiver, the limpid oil which first comes over, from the more yellow, which follows; and in like manner, the second from the third. To rectify the first limpid portion, one distillation with a slow fire is sufficient, but the other portions commonly require two; in which the limpid part must be separated in the same manner from the more impure which follows, by changing the receiver; and the process thus be continued until all the oil flows limpid and white.

Animal oils thus rectified are of a subtile, penetrating, not disagreeable, smell and taste. They are strongly recommended internally, in human diseases (and why not capable of good effect in *brutes*?) as anodynes and antispasmodics. They are likewise a very generous remedy in inveterate and chronical epilepsies, and in convulsive motions, especially if given before the usual time of the attack, and preceded by proper evacuations.

For the *Oil of Bricks*, and others not noticed here, see BRICKS, &c.

2. The *empyreumatic oils* of vegetables, rectified in the same manner by repeated distillations, suffer a like change with the animal; losing their dark colour and offensive smell, and becoming limpid, penetrating, and agreeable. In this state they are supposed, like the animal oils,

to be anodyne, antispasmodic, and diaphoretic, or sudorific. It is observable, that all the empyreumatic oils dissolve in spirit of wine, and that the oftener they are rectified or redistilled, they dissolve the more readily: a circumstance in which they differ remarkably from essential oils, which, by repeated distillations, become more and more difficult of solution.

3. *Essential Oils* are acquired by distillation. A quantity of water is added to the subject, sufficient to prevent its burning; and, in this water, it is likewise macerated a little time before the distillation. The oil comes over along with the water; and either swims on its surface, or sinks to the bottom, according as it is lighter or heavier than that fluid.

The length of the maceration is to be varied according to the texture and compactness of the subject. The most tender subjects scarcely require any. Those of a soft and loose texture are to be steeped for two or three days; and the more viscous ones, for a longer time. The further the maceration is intended to be protracted, the greater quantity of sea-salt must be added. From viscous substances the oil may be obtained in a shorter time, by submitting them to a slight, and not too long continued, fermentation. Seeds and spices are to be bruised, and woods to be rasped, previously to the maceration or fermentation.

Essential oils are obtained only from odoriferous substances; but not equally from all of this class, nor in quantity proportionable to their degree of odour; some which, if we were to reason from analogy, should seem very well fitted for this process, yielding extremely little oil, and others none at all. We shall not enlarge on these however, as being little connected with veterinary medicine.

Essential oils are prepared from vegetables in the manner of their distilled waters; but with somewhat less proportion of water. The time of maceration varies with the temperature of the season and texture of the substance, from two or three days to a week, or longer.

The oils are to be separated after distillation, by means of a funnel, the stem of which being stopped by the finger, and the liquor poured into it, the oil, if light, swims at the top; if ponderous, subsides: the undermost, whether oil or water, is, by removing the finger, first let out, and the uppermost retained by replacing the finger and again closing the stem.

The same directions are to be observed in distilling almost all the essential oils; such as those of chamomile, aniseeds, cloves, caraway, fennel, cummin, juniper, &c. of which



the detail is not at all necessary here. We shall however describe the process for distilling one of the essential oils that is highly valuable as a veterinary remedy, by way of an example for the rest.

*Oil of Turpentine.*

Take of Common turpentine, five pounds;  
Water, four pounds.

Distil the turpentine from the water in a copper alembic.

After the oil has been distilled, there remains the *resina flava*, which is only used for external application, to give consistence to plasters, and similar purposes.

This is a very hot stimulating medicine. It is sometimes given as a diuretic. Care should be taken not to give too large doses even to horses and other large cattle. Externally it is frequently employed against rheumatic pains, aches, sprains, &c. and as its action on the skin, in horses, is *peculiarly great*, it is a valuable means of determining the blood to the surface, in cases of internal inflammation, pleurisy, &c.

As all essential oils agree in the general properties of solubility in spirit of wine, indissolubility in water, miscibility with water by the intervention of certain intermedia, volatility in the heat of boiling water, &c. it is plain that they may be variously mixed with one another, or the dearer sophisticated with the cheaper, without any possibility of discovering the abuse by any trials of this kind. And indeed it would not be of much advantage to the purchaser, if he had infallible criteria of the genuineness of every individual oil. It is of as much importance, that they be good, as that they be genuine; for we often see genuine oils, from incurious distillation, and long and careless keeping, weaker both in smell and taste than the common sophisticated ones.

4. *Expressed Oils*, are those procured by strongly pressing the substances containing them. Of this class are the oils of linseed, of olives, &c. but other oils in which mechanical force is not always used are called by this name. An instance may be given in the

*Oil of Bays.*

Bruise any quantity of the ripe bay-berries before they are dry; and boil them in water for some time, and the oil will swim at top. Take this off, when cold, and keep it for use. There is no oil so much prescribed in the diseases of horses as this, though it is now seldom made. But the druggists commonly sell for it, the *ointment* of bays. See OINTMENT.

Many absurd compositions, under the name

of OILS, have been in use among farriers; but these deserve no notice.

OINTMENT, an unctuous composition used for dressing a wound, or merely rubbed on a part that is diseased. Ointments and liniments differ from plasters little otherwise than in their consistence. An officinal plaster, diluted with so much oil as will reduce it to the thickness of stiff honey, forms an ointment: by further increasing the oil, it becomes a liniment.

For making ointments, the college of Edinburgh give the following directions. Let the fatty and resinous substances be melted over a slow fire, afterwards they should be diligently stirred, sprinkling in at the same time the dry ingredients, if there should be any, reduced to a very fine powder, until the mixture, cooling, becomes of a proper consistence.

Many of the ointments adapted to veterinary uses will appear under the heads of their leading ingredient. We shall therefore confine ourselves, in this place, to the following examples, which will be occasionally referred to.

*Ceruse Ointment.*

Take of Hog's lard, four parts;  
Ceruse, two parts. Mix them.

This is useful in excoriations, and similar frettings of the skin.

*Ointment of Verdigris.*

Take of Ointment of yellow resin (*basilicum*), fifteen parts;  
Verdigris, in fine powder, three parts. Mix.

This is used for cleansing sores, and keeping down fungous flesh. When, from local debility of the vessels, ulcers continue to run, the tonic power of verdigris promises considerable advantage.

*Strong Ointment of nitrated Quicksilver.*

Take of Quicksilver, one ounce;  
Nitrous acid, two ounces;  
Hog's lard, prepared, one pound.

Dissolve the quicksilver in the spirit of nitre, by digestion in a sand-heat; and, whilst the solution is very hot, mix with it the lard, previously melted by itself, and just beginning to grow stiff. Stir them briskly together, in a marble mortar, so as to form the whole into an ointment. By adding double the quantity of prepared hog's lard, this composition may be weakened for particular purposes.

Though the activity of this nitrated mercurial is moderated by the animal fat with

which it is joined, yet it forms a very active ointment, and is frequently employed with success in cutaneous cases, and other topical affections. In this state the saline substance does not enter the habit so readily as the quicksilver does in the other ointments in which it makes the principal ingredient; hence in some cases it is employed with more freedom. But should it excoriate, and inflame the parts; or should it grow hard, as it is apt to do from the action of the acid upon the lard, it will be then necessary to reduce the strength of the ointment, by the addition of more lard.

*Mercurial or Quicksilver Ointment.*

Take of Hog's lard, prepared, twenty-three ounces;

Quicksilver, two pounds;

Mutton suet, prepared, one ounce.

Grind the quicksilver with the suet, and a little hog's lard, till the globules disappear; then gradually add the remainder of the lard, and mix them carefully together.

*Milder Quicksilver Ointment.*

Take of the stronger ointment of quicksilver, one part;

Hog's lard, prepared, two parts.

Mix them.

Mercurial unguents have in many cases the same effects with the preparations of this mineral taken internally; and are frequently employed, against cutaneous disorders.

*Ointment of Gum Elemi.*

Take of Mutton suet, prepared, two pounds;

Gum elemi, one pound;

Common turpentine, ten ounces;

Olive oil, two ounces.

Melt the gum with the suet, and having taken them from the fire, immediately mix in the turpentine and oil; then, whilst the mass remains fluid, strain it off.

This unguent has long been in use for digesting, cleansing, and incarnating wounds; and for these purposes is preferred by some to all other compositions of this kind.

*Ointment of White Hellebore.*

Take of White hellebore, powdered, one ounce;

Hog's lard, four ounces.

Oil of spike, half an ounce;

Mix, and make an ointment.

This is considered as an useful application for cutaneous affections.

*Ointment of Tobacco.*

Take of Tobacco, cut very small, five ounces;

Hog's lard, one pound and a half.

Let these be boiled together over a slow fire for two or three hours; then strained whilst hot, and strongly pressed through linen: or the tobacco may be first infused in a pint or more of boiling water, and, when cold, added to the lard, and boiled together till the water is perfectly evaporated.

This ointment, it is said, will afford an effectual cure for many cutaneous affections.

*Ointment of White Precipitate.*

Take of Hog's lard, an ounce and a half;

White calx of quicksilver, one drachm.

Mix, and make an ointment.

This is a mercurial ointment, frequently made use of against cutaneous disorders. Two drachms of the flowers of sulphur may be added, if necessary.

*Ointment of Tar.*

Take of Mutton suet, prepared,

Tar, of each equal weights.

Melt them together, and strain the mixture whilst hot.

Or,

Take of Liquid pitch, five parts;

Yellow wax, two parts.

These compositions, with the addition of half their weight of resin, have long been used in the shops as a cheap substitute for the black balsicum.

These ointments, from the tar which they contain, have been considered to possess some activity, and have been successfully employed against some cutaneous affections, particularly those of domestic animals. Sulphur is sometimes added to them.

From Mr. Ryding's "*Veterinary Pathology*," we take the following:

*Blistering Ointment.*

Take of Cantharides in fine powder, one ounce;

Ointment of yellow resin,

Purified hog's lard, of each two ounces.

Mix them well together for use.

This is an excellent blister, yet never destroys the roots of the hair, yet never leaves any blemish on the part to which it has been applied.



*Strong Blistering Ointment for Bone-Spavin, Splints, &c.*

Take of Sublimate mercury in fine powder,  
two drachms;

Purified hog's lard, three ounces.

Mix them well together for use.

The following, for similar purposes, is recommended by Mr. DENNY.

*Strong Blistering Ointment.*

Take of Cantharides, in fine powder, half an ounce;

Corrosive sublimate, in powder, one drachm;

Yellow Basilicon, four ounces;

Oil of Origanum, half an ounce.

Mix them.

*Sulphur Ointment for the Mange.*

Take of Purified hog's lard, one pound;

Sulphur, four ounces;

Hellebore, in powder, one ounce and a half.

Mix them well together to form an ointment.

This ointment, Mr. Ryding says, must be well rubbed on the parts affected, by the hand, and that it seldom fails to cure the disease in two or three applications. Other formulæ, for this purpose, are exhibited under MANGE.

*Ægyptiacum Ointment.*

Take of Verdigris in fine powder, five ounces;

Honey, one pound, or fourteen ounces;

Vinegar, seven ounces.

Boil all together till it is of a deep red, and as thick as honey.

This has been in great reputation both among farriers and surgeons for cleansing foul ulcers. It is sometimes used with good success, mixed with spirit of wine, or oil of turpentine.

*Ointment of Bays.*

Take of Bay leaves, one pound;

Bay berries, half a pound;

Colewort leaves, four ounces;

Neat's-foot oil, five pounds;

Beef suet, two pounds.

Boil them together until the watery parts of the ingredients are evaporated; and then strain it for use.

This is oftentimes sold to the farriers instead of the oil of bays, which they deem very proper in all old swellings of the joints and sinews, cramps, and paralytic numbnesses in horses.

*Ointment of Marsh-mallows.*

Take any quantity of the roots of marsh-mallows, fenugreek, and linseed, and boil them till they make a thick mucilage:

Add to two pounds of this,

Oil of olives, four pounds;

Wax, one pound;

Rosin, half a pound;

Turpentine, two ounces.

Mix all together over the fire, and make an ointment.

The mucilage should be strained from the roots and seeds, and boiled with the oil till all the watery parts are wasted; and that they are both thoroughly incorporated. This has been long in repute amongst farriers, who mix it with their ripening and suppurative cataplasms. For Ointment of Elder, see ELDER, and so of others not appearing in this article.

OLEA, the olive-tree, a genus in Linnæus's botany. He enumerates four species. The olive oil is the produce of the olea Europæa, Linn.

OLEAGINOUS (from *oleum*, oil, and *ago*, to compel), is such a substance as is oily, or of a consistence approaching thereunto.

OLEAMEN, a thin liniment composed of oils.

OLECRANON, the cubit or elbow. See CUBIT.

OLEUM, oil, from *ελαιον*, which is of *λειος*, light, or smooth, because oil polishes and makes the body smooth to which it is applied.

OLFACTORY NERVES, smelling nerves. See NERVE, SYSTEM, and Plate XXIII. They are the first pair from the brain; dividing into small filaments, which pass through the foramina of the os ethmoides. These spread on the membrane that lines the inside of the nose.

OLIBANUM, a gummy resin brought from Turkey and the East Indies. It is the produce of the juniperus lycia of Linnæus, and is retained in the college Pharmacopœia.

OLIVARIA CORPORA, are two protuberances in the under part of the brain, in the human subject, placed on each side the corpora pyramidalia, towards the lower end, having their name from their figure, which is that of an olive.

OLIVE TREE. See OLEA.

OMENTITIS, inflammation of the omentum.

OMENTUM, the *caul*, called also *reticulum*, from its structure, resembling that of a net. In all quadrupeds, as in man, when the peritonæum is cut, and the cavity of the abdomen laid open, the omentum, or caul, presents itself first to view. This membrane, which is like a

wide and empty bag, covers the greatest part of the guts. Its mouth is tied on the right side to the hollow of the liver, on the left to the spleen, backwards to the back part of the duodenum, and that part of the colon which lies under the stomach, and forwards to the bottom of the stomach and pylorus. Its bottom is loose, and being tied to no part, but floating upon the surface of the guts below the navel, was the reason why the caul was by the Greeks called *Επιπλοον*. Sometimes it descends as low as the os pubis, within the productions of the peritonæum, causing an epiplocele.

The omentum is a double membrane, interlarded, for the most part, with a great deal of fat, which lines each side of its blood vessels. These are veins from the portæ, called gastro-epiplois dextra & sinistra; arteries from the cœliacæ. The intercostal nerve and the par vagum send it several twigs of nerves. All these vessels, with some small glands accompanying one another, spread their branches very curiously upon the caul, and even to the minutest branch; they run between two lines of fat, which are bigger or smaller, according to the weight of the caul. In the human subject it has been sometimes found to weigh five pounds, but ordinarily it does not much exceed half a pound. Where there are no vessels, the membranes of the caul are very fine and transparent. Several uses are assigned to the caul, as covering the bottom of the stomach and the intestines, so that, by cherishing their heat, it may promote digestion, and help the separation of the chyle; strengthening and sustaining the vessels which go from the spleen to the stomach, intestines, pancreas, and liver; keeping a store of fat, to grease the superficies of the guts and facilitate their peristaltic motion. In cattle this part weighs many pounds.

**OMPHALOCELE** (*ομφαλοκηλη*, from *ομφαλος*, umbilicus, the navel, and *κηλη*, tumor, a swelling), a rupture of the navel.

**OPACITY**, and **OPAQUE**, from *opacus*, obscure, or dark, a quality in bodies, whereby they will not admit the rays of light through them, when held up against the light, as transparent bodies do. Sir Isaac Newton shews, that the opacity of all bodies arises from the multitude of reflections caused by their internal parts: and he shews also, that between the parts of opaque and coloured bodies, there are many spaces either empty, or replenished with mediums of different densities; and that the true or principal cause of opacity, is the discontinuity of their parts; because some opaque bodies become transparent by filling their pores with any

substance of equal, or almost equal, density with their parts. Thus paper, dipped in water or oil, linen cloth oiled or varnished, and many other substances soaked in such liquors as will intimately pervade their little pores, become by that means more transparent than otherwise; as, on the contrary, the most transparent substances may, by evacuating their pores, or separating their parts, be rendered sufficiently opaque, as salts or wet paper, by being dried, horn by scraping, glass by being powdered or flawed, water by being formed into small bubbles, either alone in the form of froth, or by shaking it together with oil of turpentine, or some other convenient liquor with which it will not perfectly incorporate. Some change of this sort is produced by inflammation affecting the naturally transparent cornea of the eye (see **EYE**), or the tunica conjunctiva. A partial or universal opacity is often the consequence of ophthalmia, and blindness ensues from the cornea being incapable of transmitting the rays of light to the retina.

**OPENING OF A HORSE'S HEELS**, a practice too common amongst ignorant blacksmiths, who, in paring the foot, cut the heel low, and take it down within a finger's breadth of the coronet. This separates the corners of the heel, and by that means impairs the substance of the foot, causing it to close and become narrow at the heels. This senseless practice ought therefore to be avoided, since, if there be any weakness in the foot, it will of necessity contract at the quarters, so as absolutely to spoil the foot. See the articles **FOOT**, **SHOEING**, &c.

**OPERATOR**, in a chirurgic sense, the person who performs an operation, with the help of proper instruments, on a human or brute animal, with a view to relieve or cure some existing disease, or remove some disabled or useless part. Amongst the qualifications required to form a good veterinary practitioner, must necessarily be ranked that of dexterity and adroitness in performing operations. We propose to treat this subject particularly under the article **VETERINARY SURGEON**.

**OPERATION**. The processes in pharmacy, several manual parts of surgery, as also the working or effects of medicines, are often thus termed. See **OPERATOR**.

**OPHTHALMIA**, *οφθαλμια* (from *οφθαλμος*, an eye), an inflammation of the tunica adnata of the eye. See **EYE**.

**OPHTHALMIC NERVES**, the fifth pair of the head. See **NERVE**, and **SYSTEM**.

**OPHTHALMICS**, medicines used in disorders of the eyes.



**OPIATES.** This name has by some authors been given to all medicines that have opium in their composition; but it is more properly given to such medicines as have no other intention but to procure sleep. See **NARCOTICS** and **OPIUM**.

**OPISTHOTONOS** (οπισθοτονος, from οπισθεν, *backwards*, and τονος, from τεινω, *to stretch*), a variety of the tetanus, which see.

**OPIUM**, an extract formed from the milky juice exuding from incisions made in the heads of the *papaver somniferum*. Linn. This drug has not yet been collected, in any quantity, in Europe. Egypt, Persia, and some other provinces of Asia, have hitherto supplied us with this commodity: in those countries, large quantities of poppies are cultivated for this use. The opium prepared about Thebes in Egypt, hence named Thebaic opium, has been usually esteemed the best; but this is not now distinguished from that collected in other places. This juice is brought to us in cakes or loaves, covered with leaves and other vegetable matters, to prevent their sticking together: it is of a solid consistence, yet somewhat softish and tenacious, of a dark reddish-brown colour in the mass, and, when reduced into powder, yellow; of a faint disagreeable smell, and a bitterish taste, accompanied with a pungent heat and acrimony.

The general effects of this medicine on the human body must be known, in order to appreciate its qualities as a veterinary remedy. These are, to relax the solids, and render them less sensible of irritation, to cheer the spirits, ease pain, procure sleep, promote perspiration and sweat, but restrain all other evacuations. When its operation is over, the pain and other symptoms which it had for a time abated, return; and generally with greater violence than before, unless the cause has been removed by the diaphoresis or relaxation which it occasioned.

The operation of opium is generally attended with a slow, but strong and full pulse, a dryness of the mouth, a redness and slight itching of the skin; and followed by a degree of nausea, a difficulty of respiration, lowness of the spirits, and a weak languid pulse. The cases which principally indicate the use of opium are, great watchfulness, immoderate evacuations proceeding from acrimony and irritation, cramps or spasmodic contractions of the nerves, and violent pain of almost every kind. In these cases opiates procure at least a temporary relief, and an opportunity for other medicines, properly interposed, to take effect.

Opium, however, sometimes defeats the intention of the physician, and, instead of producing rest, occasions great anxiety, vomiting, &c. Taken on a full stomach, it often proves emetic. Where the patient is exhausted by excessive evacuations, it occasions generally great lowness. It has been observed to operate more powerfully in persons of a lax habit, than in the opposite circumstances. Whilst it usefully restrains preternatural discharges proceeding from irritation, it proves injurious in those that arise from a contrary cause, as in the colliquative diarrhoea attending hectic fevers. By relaxing, taking off stricture, and occasioning a paralysis of particular parts, it often promotes such evacuation as those parts are concerned in. Boerhaave observes, that it sometimes enables the ureters to allow an easy passage even to the calculus: but this effect is by no means constant.

When opium is so managed as to procure sweat, it will tend to remove the inflammatory state of the system, and may prove generally useful; which is proved by the cure of the acute rheumatism from the exhibition of the compound powder of ipecacuanha. Though the use of opium is forbid in the first stage of the eruptive fever of the small-pox; as at this period of the disease the pulse is often found to be languid, and the countenance pale, though pains in the head and loins are at the same time very severe: these symptoms, with restlessness and other signs of irritability, which appear for some days after the attack of the disease, are considerably relieved by opium; to which are perhaps added camphor and tartarised antimonial wine, taking care to keep the body open. In hæmorrhages excited by irritation, unattended with inflammation, opium is useful. In dysentery it has been occasionally employed to moderate the violence of the symptoms, though not considered as a remedy. In the latter stages of diarrhoea, when the acrimony producing it has been carried off in a great measure, opium is an efficacious remedy. In cholera and pyrosis, it is chiefly to be relied upon. Joined with laxatives it is employed in colic; and, doubtless, by relieving the spasm, often prevents ileus, and inflammation: nay, indeed, it is frequently found to allay the vomiting, the spasms, the pain, and sometimes to diminish the inflammation, and prevent the gangrene of the strangulated gut, in ileus and in incarcerated hernia. In different species of tetanus opium is powerful, and affords relief to various spasmodic and convulsive symptoms occurring in other diseases.

In intermittents, opium has been strongly re-

commended, as an effectual means of stopping the recurrence of the febrile paroxysms, and has been given before the fit, in the cold stage, in the hot fit, and during the interval, with the best effects; producing immediate relief, and in a short time curing the patient; without leaving those abdominal obstructions which have been ascribed to the bark. But in these fevers the best practice perhaps is to unite opium with the bark, which enables the stomach to bear the latter in larger doses, and adds considerably to its efficacy.

With regard to the dose of opium, one grain is sufficient for a man, and often too large a one; maniacal persons, and those who have been long accustomed to take it, require three or more grains to have the due effect: but its dose varies in different persons, and in different states of the same person. A quarter of a grain will in one adult produce effects which ten times the quantity will not do in another: and a dose that might prove fatal in colic or cholera, would not be perceptible in many cases of tetanus, or mania. The lowest fatal dose to those unaccustomed to take it is four grains: but a dangerous dose is so apt to produce vomiting that it seldom occasions death. Injected up the rectum, it has all the effects of opium taken into the stomach; but double the quantity is to be employed to answer the purpose. Applied to the naked nerves of animals, it produces immediate torpor, and loss of power in all the muscles with which the nerves communicate. Among the eastern nations, who are habituated to opium, a drachm is but a moderate dose. Garcias relates, that he knew a person who every day took ten drachms. Those who have been long accustomed to its use, upon leaving it off are seized with great lowness, languor, and anxiety; which are relieved by having again recourse to opium, and, in some measure, by wine or spirituous liquors.

Opium, taken into the human stomach in an immoderate dose, proves a narcotic poison, producing vertigo, tremors, convulsions, delirium, stupor, stertor, and finally a fatal apoplexy.

Opium is partially soluble in water, and in rectified spirit: proof spirit, wine and vinegar, totally dissolve it; the impurities only being left. The solutions in proof spirit and wine have the same effects with the juice in substance; with this difference, that they exert themselves sooner in the body, and are less apt to leave a nausea on the stomach. A tincture made in rectified spirit is supposed to operate, in an equal dose, more powerfully than the foregoing liquors. Geoffroy informs us, from his own experience,

that, whilst the watery and vinous solutions occasioned pleasant quiet sleep, a tincture drawn with pure spirit brought on a phrensy for a time. Alkaline salts diminish the soporific virtue of this medicine: fixt alkalies render it diuretic, whilst volatile ones determine its action chiefly to the cutaneous pores. Acids are said almost to destroy its power. Many have endeavoured to correct some imaginary ill qualities of this drug, by toasting it, by fermentation, by long-continued digestions, by repeated dissolutions and distillations. These processes, though recommended by many writers, do not promise any singular advantage: they may indeed weaken the opium; but these means make it prejudicial, rendering the medicine more uncertain in its operation, and the dose more undetermined.

Opium applied externally gives ease in many pains, and probably, as some have supposed, stupify the part, or render it insensible of pain: used immoderately, it is said to produce the same ill effects as when taken to excess internally.

Thus far we have detailed the effects of Opium, with their varieties, in the human constitution; we will now confine ourselves to the supposed operation of this important remedy on the horse. Strange to tell, there are grounds for suspecting that, as a veterinary remedy, it is unimportant if not inefficacious; at least PROFESSOR COLEMAN, after various trials at the VETERINARY COLLEGE, goes the length of asserting in his lectures, that "*opium has no particular power over the horse. Four ounces of it have been given to a horse; and this quantity has caused pain and inflammation in the stomach. But it has no apparent influence over the nervous system, nor does it alleviate pain. It has some astringent power.*" We apprehend, however, that some error must have occurred in the experiments which have led to these opinions as to the effects of opium on the horse; as our own experience directly contradicts them, and confirms us in the opposite conclusion, viz. that opium *has great influence over the nervous system, and that it will consequently alleviate pain.* A condemned troop horse had *half an ounce only* of purified opium given to him. He slept, though in the day-time, for eight or nine hours, nor could he be readily roused. Besides this, we have frequently seen the most violent stages of flatulent colic in horses removed by opium, without the aid of any other medicine; and in all such instances, the animal was afterwards *much inclined to sleep.* We do not wish, however to influence the opinion of others; but rather that further trials should be made by inge-



nious men in the profession, with a view to reconcile these seeming contradictions.

**OPODELDOC**, a kind of soapy liquid, commonly used as a remedy for strains. Mr. RYDING gives the following receipts for it:

*Common Opodeldoc.*

Take of Castile soap, three ounces;

Camphor, one ounce;

Spirits of rosemary, one pint.

Dissolve the soap in the spirits with a very gentle heat; then add the camphor in powder. When it is completely dissolved, the composition is fit for use.

*Volatile Opodeldoc.*

Take of Castile soap, two ounces;

Compound spirits of ammonia, one pint;

Camphor, one ounce.

Dissolve the soap and camphor in the spirits, with a gentle heat, and keep them for use in a bottle closely stopped.

Both these liniments, he says, will be found excellent in recent strains, bruises, or tumours, on any part of a horse. The method of application is, by rubbing a necessary quantity well on the part, with the hand, two or three times a-day.

A more simple recipe for *common Opodeldoc* is given by Mr. DENNY, viz.

Take of Camphor, one ounce;

Soft soap, three ounces;

Proof spirit, two pints.

Digest them together till the camphor and soap are dissolved. No heat is necessary, nor need the camphor be pulverised: perhaps the solution of the solid ingredients would be facilitated, by first dissolving the camphor, before the soap is added.

**OPOPANAX**; *Pastinaca Opopanax*, Linn. a concrete gummy resinous juice, obtained from the roots of an umbelliferous plant, which grows spontaneously in the warmer countries, and bears the colds of this. The juice is brought from Turkey and the East Indies, sometimes in round drops or tears, but more commonly in irregular lumps, of a reddish-yellow colour on the outside, with specks of white, inwardly of a paler colour, and frequently variegated with large white pieces. It has a peculiar strong smell, and a bitter, acrid, somewhat nauseous, taste. Its virtues are those of an attenuating and aperient medicine. Gibson frequently employed it, along with ammoniacum and galbanum, in asthma, especially when connected with a phlegmatic habit of body.

**OPTIC NERVE** (from *οπτειν*, to see).

These are the second pair which proceed from the brain. See NERVE, SYSTEM, and Pl. XXIII.

**ORBICULAR BONE**, is one of the bones of the inward ear, tied by a slender ligament to the sides of the stapes; thus called from its figure, *orbis* signifying round, like a globe. See EAR.

**ORBICULARIS** (from *orbiculus*, a little ring), the name given to such muscles as embrace, or completely encircle, any part. Thus the mouth, eyelids, &c. of animals, are furnished with orbicular muscles. See an instance of the former in Plate II. *g, b, i, k*; and the description of muscles, &c. "In the head," under ANATOMY of the Horse.

**ORBIT**, signifies the round of any thing, whether concave or convex: but in anatomy is most commonly used for the cavity in which the eye is placed. See EYE.

**ORBITAL ARTERIES**, those of the orbits of the eyes. They are branches of the inferior maxillary arteries.

**ORBITALE EXTERNUM, FORAMEN**. It is in the os maxillare, below the orbit; through it the nerves and vessels which come from the teeth pass to the cheek.

**ORBITALE INTERNUM, FORAMEN**. It is a little above the os planum; through it goes a branch of the fifth pair of nerves to the nose.

**ORES**. These are native substances, in which metals are mineralised either by sulphur or arsenic, but most frequently by both together. Few of them are used in medicine in their natural state.

**ORGAN**, or **ORGANICAL**, that part of an animal or vegetable body which is designed for the performance of some particular action, in opposition to a part that is in-organical, and which cannot, of itself, perform an action. Thus the organ of sight is the eye, with all its parts; the organ of hearing, the ear, &c.

**ORGASM** (*οργασμος*), an impetus, or quick motion of the blood or spirits, whereby the muscles are convulsed, or move with uncommon force, from what cause soever it proceeds; though, by *οργασμ*, the ancients generally understood an ungovernable desire of coition, when the feminal vessels were so turgid, as not to contain their contents from involuntary emission.

**ORIGANUM**, marjoram, a genus in Linnaeus's botany. He enumerates eleven species. Marjoram supplies one of the essential oils (see OILS) used in *veterinary practice*.

**ORPIMENT**, sulphur combined with arsenic. From this union there results a semi-transparent, very weighty mass, of a yellow or red colour, ac-

cording to the proportion of sulphur, which is orpiment.

**ORRIS-ROOT**, the Iris Florentina. See IRIS.

**ORTHOPNŒA** (*ορθοπνοια*), strictly signifies that difficulty of breathing which arises from running, or violent exercise. Whatsoever occasions the blood to run slower through the lungs, so that they cannot elevate the breast, or cause the blood to be circulated in due quantity, must occasion disease. See **ASTHMA**.—This disease, when neither a species of asthma nor of dyspnœa, is only a symptom of some other malady.

**ORYZA**, rice, a genus in Linnæus's botany. There is but one species.

**OS**, a bone. Bones consist of a mucilage and an earthy matter. Acids dissolve this earthy matter, leaving the bone of its original shape, but soft. The earthy matter forming bone is deposited by the exhaling arteries. The bones of the horse are described under the articles **BONES**, **SKELETON**, &c.

The bones are composed of fibres, disposed in laminæ; which laminæ, laid over each other, compose the substance of the bone. In the fœtus the bones seem a network of threads; but when ossification is further advanced, these threads are not so apparent, the interstices being filled up with others.—The bones are composed of a hard, solid, of a cellular, and of a reticular, part. The cellular part is formed by the inner laminæ of the solid part, departing towards the axis of the bone. The reticular part lies in the cavity of the bone, and by degrees, as it approaches the extremities, unites, seeming partly to form the cellular part. There are no nails to join the laminæ, as some have described; they are rather connected by transverse fibres. The cavity of the bones serves not only to contain the marrow, but, by the increase of the diameter, the strength of the bone is augmented. The bones have numerous blood-vessels, but especially in the spongy and reticular parts, though the solid part is not without them: these vessels run according to the fibres of the bone; thus, in the long bones, they run longitudinally. In the round bones, as in the os bregmatis, they run radiated, becoming less and less visible as they approach to the centre of the bone, because there the laminæ are the thickest. The bones are full of pores for the admission of vessels: in the middle these pores are more large and conspicuous; in the extremities they are smaller. In every cylindrical bone there is a hole about its middle for the admission of an artery and its vein, which pass slanting through the

substance of the bone, and branch through the internal periosteum, or membrana medullæ, which lies betwixt the medulla and the internal surface of the bones, and even branch externally again through the bone. These branches frequently anastomose, whence the bone may be nourished from within outwards, as well as from without inwards. This internal periosteum is liable to the disorders of other vascular substances, as inflammation, obstruction, suppuration, &c. with their consequences: but where these happen, the structure of the bone is frequently quite destroyed, as in the spina ventosa. Bones are furnished with nerves, and yet, if not inflamed, are mostly insensible. There are vessels whose office is to carry bony matter, and occasionally to absorb it. (See **OSSIFICATION**). The membrana medullæ not only lines the surface of the bone internally, but also divides the marrow into vesicles or membranous bags, which are furnished with very fine minute vessels. (See **MARROW**). The middle part of the larger bones is much less in diameter than the extremity, to give a greater firmness to the joint, and to allow a greater space for the fleshy bellies of the muscles. The middle part of the bones is not smaller than the extremities merely by pressure, as we may observe in the fœtus; it is their original conformation, though pressure seems to have some effect in this case, as we may observe in weakly subjects, and in women of a sedentary life. The bones are entirely smooth, though in a robust habit there are cavities and furrows on their surface formed by the action of the muscles. The bones are, cæteris paribus, weaker in their middle part, from their diameter being less; whence in this part they are more exposed to fractures; but to compensate this, there are more lamellæ in the middle than in the extremities, and they are more compactly joined: there is a cavity also there which contains the marrow, and thus the strength in this part is greater than otherwise it would be. Many bones have protuberances rising out of them, which are called processes; and in many there are cavities: if these are deep, with large brims, they are called cotylæ; if superficial, glenæ or glenoid; which general classes are divided into several species, of which pits are small roundish channels, sunk perpendicularly in the bone; furrows are long narrow canals, formed in the surface; niches are small breaches in the bone; sinuosities are broad but superficial depressions without brims; fossæ are large deep cavities, which are not equally surrounded by high brims; sinuses are large cavities within the bones



with small openings; foramina, or holes, are canals that pierce through the substance of the bones. The use of these cavities is to allow room for heads or bones to play in; to defend and lodge softer parts; and to afford a passage for vessels, muscles, &c. The bones are destroyed in living subjects, by the action of air, or by blood lodging upon them. The classes into which the bones are divided are usually as follow:—1st. The cylindrical; these are compact in the middle, and spongy in their extremities. 2dly. Spherical; these are entirely spongy, except a thin plate on the external surface. 3dly. The flat; they are compact on the outside and inside, but between the plates are spongy. 4thly. The irregular, which, when thick, are like the round, and, when thin, are like the flat, ones.

Mr. Sheldon observes, that bones are composed of fibres connected by cellular substance: there are two portions in bone; one the living vascular or organised part; the other dead calcareous earth, which, though a dead matter treasured up in a living substance, yet does not stimulate or irritate. If bone is soaked in spirit of salt and water, it will leave nothing but vessels and membranes: it appears to be an inorganic concrete, but it is very much organised. The source of blood to the bone is from the internal and external periosteum, whose vessels copiously anastomose with each other in the substance of the bone. In the flat bones the vessels anastomose in the diploë or medullium. The arteries, veins, nerves, and absorbents, unite in like manner. All the spongy bones, as the sternum, vertebræ, sacrum, &c. are covered with a strong ligamentous substance. The whole sensibility of the bone does not reside in the periosteum: bone becomes most exquisitely sensible in the highly inflamed state, owing to the vessels swelling, and the substance round them being inelastic.

OS (from *οσα*, the voice; or from the letter O, because of its shape), the mouth. See MOUTH.

OSCITATION, a slight convulsive motion of the muscles, which is commonly called yawning, or stretching, as in the beginning of an ague-fit.

OS EXTERNUM. The entrance into the vagina is thus called, in opposition to the mouth of the womb, which is called the os internum in obstetric language.

OSSA INNOMINATA, are two large bones situated on the sides of the os sacrum: in a foetus they may be each separated into three pieces, which, in adult subjects, unite and make

but one bone, in which they distinguish three parts. The first and superior part is called os ilium; the intestine ilium lies between it and its fellow. It is very large, almost of a semicircular figure, a little convex and uneven on its external side, which is called its dorsum; and concave and smooth on its internal side, which is called its spine. It is joined to the sides of the three superior vertebræ of the os sacrum, by a true suture; it is larger in women than in men.

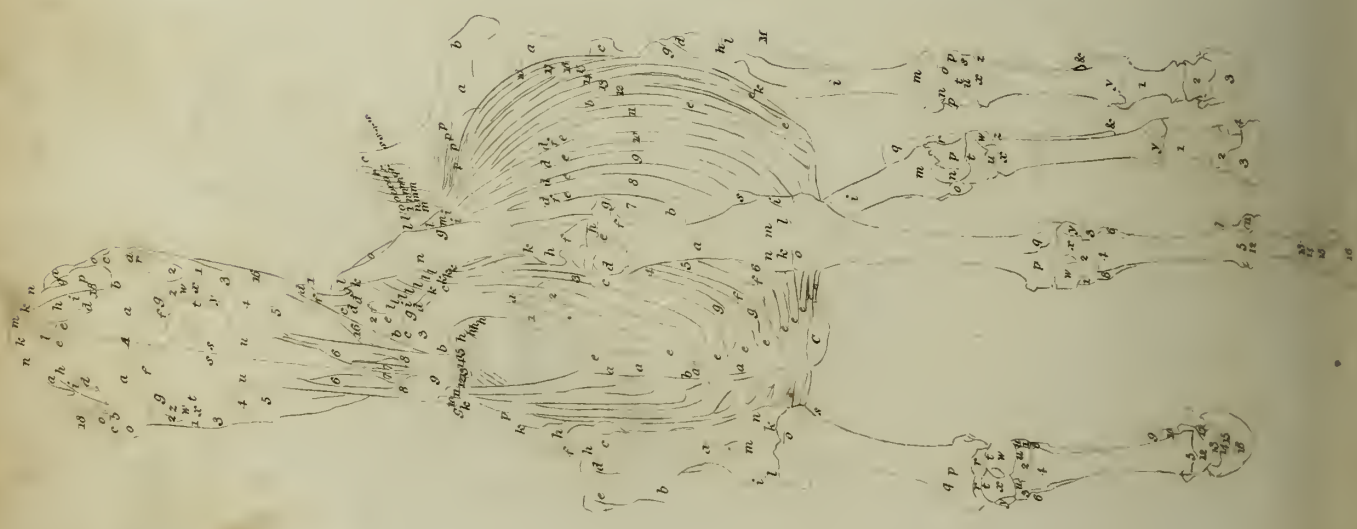
The second is the os pubis, which is the inferior and fore-part of the os innominatum: it is united to its fellow of the other side by an intervening cartilage, by which means it makes the fore-part of the pelvis or basin, of which the os sacrum is the back-part, and the ilia the sides. See PELVIS.

The third is the inferior and posterior, called ischium, or coxendix; it has a large cavity called acetabulum coxendicis, which receives the head of the thigh-bone: the circumference of this cavity is tipped with a cartilage called its supercilium, where it joins the os pubis; it has a large hole called foramen ischii & pubis, about the circumference of which the muscles called obturator internus and externus arise: and at its lower end it has a large protuberance upon which the human body rests in sitting, and from whence the flexors of the leg arise. And a little above this, upon its hinder part, it has another small acute process, betwixt which and the former protuberance lies the sinus of the ischium, through which the tendon of the obturator internus passes. For an account of the os innominatum in the horse, see the article BONES; also Plate V. *a, b, c, d*, &c. description of bones "*in the pelvis*."

OSSIFICATION (from *os*, a bone, and *fit*, to become). Dr. Nesbit says, that in the blood, or a fluid secreted from it, there is an ossifying juice, consisting of particles that are not apparent; that whenever nature designs an ossification between membranes, or within a cartilage, she occasions a more than usual afflux of this fluid, which so distends the vessels that were before invisible as to make them capable of receiving the red globules of blood, which are always to be seen near the place where ossification is begun. In this blood gritty bony particles are to be felt by the point of a knife, which have been formed by the attraction and cohesion of the particles of the ossifying juice obstructed, along with the other grosser fluids, in the beginning of the vessels prepared to receive the reflux juices. The blood being capable of forming fine membranes, the mem-







branous parts of a bone, which act as a gluten to keep these particles and fibres together, if there be any such that do not arise from the coats of its vessels, are produced by a cohesion round the cretaceous particles of a part of the fluid in which they were generated and contained. Thus the membranes of cartilages serve as a bed, between or within which the bony particles are deposited or shoot; but without any intermixture of the particles of the bone and cartilage, or continuation of the fibres of the one substance to those of the other, as is evident in cartilages containing bones, kept long enough in water, and then slit; for the bone will, as soon as the large vessels that enter its substance are divided, slip as easily from it as an acorn does out of its cup; and there is a smoothness and a polish of the parts of both cartilage and bone, which show there is no conjunction of the fibres of the two substances. While the bones are increasing within cartilages, the cartilages are extended and spread out, by which, with the pressure which they suffer, and the great influx of various fluids, and the nutritious matter being hindered from flowing freely into them, they decrease continually, and, at last, may truly be said to be entirely destroyed.

Dr. Hunter, in his Lectures, supports Dr. Nesbit's opinion, by curious anatomical preparations, which oppose Kerckringius and others, who say that bones are cartilages in their original state.

Dr. Hunter was possessed of a preparation of the patella, which demonstrated that the ossification of that bone began by the arteries ossifying in the centre of the cartilage, which, in young subjects, supplies the place of a bony patella. Mr. Cruikshank also prosecuted that subject, from the first appearance of an ossifying artery, to the perfect formation of the patella. He supposed that the same thing took place in all other bones, and accordingly made preparations to demonstrate it. These indeed shew that ossification is not only begun, but carried on, by the ossifying of the arteries. Mr. Hunter's experiments to illustrate this obscure process are noticed under the article BONES.

Morbid ossifications frequently happen in the aorta, lungs, pericardium, and other parts; and this takes place both in the human and brute subject.

**OSSLETS.** Gibson describes these to be little hard substances that arise amongst the small bones of the knee, on the inside. He says, they grow out of the substance which connects those bones together, and arise from strains while a horse is young, before his joints are

well knit. They are not common, however; and if observed in the beginning, a little oil of organum rubbed on the part every other day will dissolve them: but if they are of long continuance, they require firing, which is the most certain method to effect a cure.

**OSTEOGRAPHY** (from *οστέον*, a bone, and *γραφω*, to describe). It describes a skeleton, and all the bones which compose the several parts: or, in other words, it is the doctrine which delineates the bones.

**OSTEOLOGY** (from *οστέον*, a bone, and *λογος*, a discourse); a description of, or the doctrine relative to, the bones. It includes osteogeny, osteography, and synosteography. We have treated fully on this subject, as it relates to the horse, under the articles BONES and SKELETON.

*Plate XXIV. exhibits another View of the Skeleton of a Horse, of which the following is an Explanation:*

*Bones in the Head.*

*A a a b b c c d d e e f f g g* The os frontis, or forehead bone, divided into two by the continuation A of the sagittal or longitudinal suture; *b b* the superciliar foramina, or holes transmitting each a small artery and nerve, out of the orbit, to the frontal muscles; *c c* sutures which conjoin the frontal bone with the zygomatic or jugal processes of the temporal bones; *d d* sutures common to the os frontis with the temporal bones, which are squamose parts of the coronal suture; *e e* those parts of the coronal suture which make a true suture, and are common to the frontal bone with the parietal bones; *f f* sutures common to the frontal and nasal bones; *g g* sutures common to the frontal bone with the ossa unguis.

*h h i i k k l* The vertical or parietal bones; *i i* the squamose or scale-like sutures, which are formed by the conjunction of the parietal with the temporal bones; *k k* the lambdoid suture formed by the conjunction of the parietal bones with the occipital bone; *l* the sagittal or longitudinal suture, formed by the union of the two parietal bones.

*m n n* The occipital bone; *m* the large protuberance which is marked *l* in Plate VI. and which, in a horse, is called the nole bone; *n n* appendixes or additions to the lambdoid suture formed by the union of the occipital bone with the temporal bones.

*o o o o p p q q r r* The temporal bones; *o o o o* the zygomatic or jugal processes of the temporal bones; *r r* sutures common to the zygomatic



processes of the temporal bones with the ossa jugalia or cheek bones.

*sssttuu* The ossa nasi, or bones of the nose; betwixt *s* and *s* is a future common to the two nasal bones; *tt* futures common to the nasal bones with the ossa unguis; *uu* futures common to the nasal bones with the upper jaw bones.

*wwxxxyyzz* The ossa unguis; *x* futures common to the ossa unguis with the ossa jugalia; *yy* futures common to the ossa unguis with the ossa maxillaria, or great bones of the upper jaw; *zz* small protuberances or roughnesses, from which arise the orbicular muscles of the eyelids.

*112233* The ossa jugalia, or cheek bones; *33* futures formed by the union of the cheek bones with the upper jaw bones.

*44556677889* The ossa maxillaria, or great bones of the upper jaw; *55* the foramina, or holes of the channels, which pass along the bottoms of the orbits of the eyes; *66* parts of the upper jaw bones which belong to the bottoms of the nostrils and arch of the palates; *77889* the anterior parts, which are joined to the posterior parts of these bones by futures marked *14* in the skeleton in Plate V.; *77* parts belonging to the bottoms of the nostrils and to the arch of the palate; *9* a future common to the upper jaw bones.

*101112131415* The six dentes incisores, cutting teeth, or nippers, of the upper jaw.

*16161818* Maxilla inferior, the lower mandible or jaw bone; *1818* the coronoid apophysis.

#### *In the Spine.*

*aa* The transverse processes of the atlas, or uppermost vertebra of the neck.

*1d* The transverse process of the fifth vertebra of the neck.

*2bcddefg* The sixth vertebra of the neck; *b* the anterior and lower part of the body of this vertebra, which receives the superior part of the body of the seventh vertebra; *c* the superior part of the body of this vertebra, which is received by the fourth vertebra; *dd* the transverse process; *e* the anterior oblique process which is peculiar to this vertebra, and marked *z* & in Plate VI.; *f* the upper oblique process; *g* the lower oblique process.

*3bcdfg* The seventh or last vertebra of the neck; *3* the body; *b* the anterior protuberance of the body of this vertebra; *c* the head or upper part of the body of this vertebra, which articulates with the vertebra above it; *d* the transverse process; *f* the upper oblique process; *g* the lower oblique process.

*bbbhikk* &c. *11* &c The vertebræ of the back; *bbbb* the bodies; *i* the upper oblique process of the first vertebra of the back; those of the rest are not seen in this view; *kk* &c. the transverse processes; *11* &c the spinal processes.

*1mnop* The first vertebra of the loins; *m* the upper oblique process; *n* the lower oblique process; *p* the transverse process; *o* the spinal process.

The same explanation will do for all those of the loins.

*qrrrr* The os sacrum, or great bone of the spine; *q* the upper oblique process, by which it articulates with the lower oblique process of the lowest vertebra of the loins; *rrrr* the spinal processes.

*ssss* The bones of the tail.

#### *In the Thorax and Shoulder-blades.*

*aaaaab* The sternum, or breast bone, of which the parts *aaaaa* are bony, the rest *b* is chiefly cartilaginous or ligamentous and connects the bony parts together.

*C* The cniform cartilage.

*1cde* The first rib on the right side; *c* the head, by which it is articulated with the transverse process of the first or uppermost vertebra of the back; *d* the anterior or former part of the said head which is connected to the bodies of the seventh vertebra of the neck, and first of the back; *e* the cartilaginous end by which it is continued to the sternum.—This explanation will serve for the rest of the ribs on both sides, which are figured according to their order from the first or uppermost.

*fghikkllmno*, *fghkkp* the scapulæ, or shoulder blades; *f* the neck; *g* the spine; *h* the coracoid or crow's-bill process; *ii* the inferior costa; *kk* the superior costa; *ll* the basis; *m* fossa sub-spinalis; *n* fossa supra-spinalis; *o* a cartilaginous continuation of the basis scapulæ; *p* the internal and concave side of the left scapula.

#### *In the Pelvis.*

*abcdddddeeeeff* The innominate or basin bones, including three others; *abr* the os ilium or flank bone; *b* the anterior part of its spine; *c* the posterior part of its spine; *dddd* part of the ischion or hich bone, seen betwixt the ribs; *eeee* part of the os pubis, seen also betwixt the ribs; *ff* the foramina or holes of these bones, seen likewise betwixt the ribs.

#### *In the upper Limbs.*

*abcdefghiklmn*, *abcdehiklmn* the humeri, or bones of the arm; *b* denotes a protuberance into which the teres minor is inserted;

*c d e f g b* the upper head; *c d e* three protuberances which form two sinuses or grooves, which are incrufted with a smooth cartilage; they serve to confine the heads of the biceps muscle of the arm from slipping sideways, but suffer them easily to slide up and down; *b* that part of the head which is covered with a smooth cartilaginous crust, and articulates with the scapula; *i* the external condyle of the lower head; *k l* the lower head covered with a smooth cartilage with which the radius is articulated; *k* the round articular eminence; *l* the double articular eminence; *m* the anterior fossula or sinus that receives the upper head of the radius when the cubit is bent as much as it can be; *n* the internal condyle.

*o p q, o p q r r* The radii, or the radius of each arm; *o* a protuberance in the upper head, into which the biceps and brachialis are inserted; *p* denotes a sinus, or groove, in the lower head, through which goes the tendon of the extensor carpi radialis; a sinus, through which goes the tendon of the extensor digitorum communis; *r r* a smooth cartilaginous incrustation of the lower head, where it articulates with the bones of the carpus.

*s s* The olecranon of the ulnæ.

*w x y 1 2 3 1 u 2 u 3 u w t x t y* The bones of the carpus; *w t* os scaphoides, or naviculare; *t* the part which articulates with the radius, covered with a smooth cartilaginous incrustation; *x t* os lunare, or the lunar bone of the carpus, or wrist; *t* the part incrufted with a smooth cartilage by which it articulates with the radius; *y* the cuneiform or wedge-like bone of the carpus; *1 u* the trapezoid, cubical, or least of the multangular bones of the carpus, at *u* incrufted with a smooth cartilage for its articulation with the navicular bone of the carpus; *2 u* os magnum, or the great round-headed bone of the wrist; *u* the part which articulates with the os magnum and os lunare, incrufted with a smooth cartilage; *3 u* the unciform or hook-like bone of the wrist, at *u* incrufted with a smooth cartilage, by which it articulates with the lunar and cuneiform bones of the carpus: these cartilaginous incrustations do not appear in the left carpus, the joint being fully extended.

*4 5 6 7 8, 4 5 6 8 9* The metacarpal bones, called, in the skeleton of a horse, the shank bones; *4 5* the shank bone which is equal to the metacarpal bone of the middle-finger, and that of the ring-finger both together; *4* the upper head; *5* the lower head, incrufted, in this place, with a smooth cartilage for its articulation with the great pastern or first phalanx of the fingers; *6 7* an imperfect metacarpal

bone, in the place of that which, in the human skeleton, belongs to the little-finger; *6* the upper head by which it articulates with the unciform bone of the carpus; *7* the lower head which is very small, and (the bones of the little-finger being wanting) forms no articulation; *8 9* an imperfect metacarpal bone in the place of that which, in the human skeleton, belongs to the index or first finger; *8* the upper head, by which it articulates with the trapezoid bone of the carpus; *9* the lower head, which is very small, and (the bones of the first-finger being wanting) forms no articulation.

*10 11* Sesamoid bones.

*12 13, 12 13* Bones which are equal to the bones of the first phalanges of the middle and ring fingers in the human skeleton: in a horse these are called the great pasterns.

*14 15, 14 15* bones of the second phalanges; the little pasterns or coronary bones.

*16 16* The bones of the third phalanges or coffin bones.

*17* A sesamoid bone, lying over the posterior part of the articulation of the coronary bone with the coffin bone, or the two last phalanges.

*In the lower Limbs.*

*a b c d e, a f f* The thigh bones; *a* the greater trochanter or ipoke; *b* the less trochanter; *c* the protuberating part of the linea aspera, into which the external glutæus is inserted along with a part of the musculus fascia lata; *d* the outer condyle; *e* the inner condyle; *f f* the anterior part of the lower head of the right femur covered with a smooth cartilage for its articulation with the patella, and its internal-anterior and internal-lateral ligaments.

*g, g g* The patellæ or knee-pan bones.

*b* The outer semi-lunar cartilage in the joint of the knee.

*i k l m, i m* The tibæ, or great bones of the legs; *k l* the upper head; *k* a protuberance, into which is fixed the anterior ligaments of the patella; *l* that part which belongs to the joint of the knee and is covered with a smooth cartilage; *m* the lower head, which articulates with the bones of the tarsus.

*M* The fibula.

*n o p p, n o p* The astragali, or cockal bones; *n o* the part which forms the juncture with the bone of the leg, covered with a smooth cartilaginous crust.

*q r* The os calcis, or heel bone; *r* the projecting part that sustains the astragalus.

*s* The cuboid, or cubical bone of the tarsus.

*u* The navicular bones of the tarsus.

*u u* The middle cuneiform bones of the tarsus.



*w* The small cuneiform bone of the tarsus.

*xyz*  $\mathfrak{G}$ , *xyz*  $\mathfrak{G}$  The metatarsal, or instep bones; *xy* a bone which is equal to the metatarsal bones, of the second and third small toes both together in the human skeleton; *x* the upper head, which articulates with the three lower bones of the tarsus; *y* the lower head, which, in this place, is incruited with a smooth cartilage, and articulates with the upper head of the first phalanx or order of the small toes; *z*  $\mathfrak{G}$  *z*  $\mathfrak{G}$  the imperfect metatarsal bones.

11 The bones which are equal to the first phalanges of the second and third small toes: in the skeleton of a horse these are called the great pasterns.

22 The bones of the second phalanges, called in the horse the little pasterns, or coronary bones.

33 The bones of the third phalanges, or coffin bones.

44 The sesamoid bones, lying over the posterior part of the articulation of the coronary bone with the coffin bone, or the two last phalanges.

Other accounts of the bony structure of the horse will be found under the articles BONES, and SKELETON.

OTALGIA (*ωπάλγια*, from *ος*, *auris*, the ear, and *αλγεω*, *doleo*), a pain in the internal part of the ear, or ear-ache.

OTITIS, inflammation in the internal ear.

OVA, *eggs*. This term is applied to every production of a living creature which contains the rudiments of its kind, whether the same be external or otherwise. Every individual, from the largest bird to the smallest insect, propagating its species by dropping its eggs, is termed *oviparous*. Yet even viviparous animals propagate their species by *ova*; with this difference, that the latter are brought to perfection within the body of the mother before parturition.

OVA ZEPHYRIA, eggs which are not impregnated by the tread of the cock. They are otherwise called *wind eggs*, said to be conceived in a westerly wind; hence the name, from zephyrus, the west wind.

OVALE FORAMEN (from *ovum*, an egg; from its shape). See HEART.

OVARIA (from *ovum*, an egg), the Ovaries. They were formerly called the female testicles; but since anatomists have thought that they perceived clusters of eggs in them, they have named them ovaria. As they exist in the human subject, Dr. Hunter thinks they are properly testicles secreting female seed, which is taken up and conveyed by the Fallopian tube

to the uterus. The ovaries are two small bodies situated behind each Fallopian tube; they are of a different size and figure sometimes in the same body. At the age of puberty they are of a proper size, and continue plump and full, in women, until the menses depart. They receive vessels from the spermatics, which run on to the uterus, and anastomose with the hypogastrics. The nerves are from the intercostals, lumbar and sacral. Besides the liquor, which resembles the white of egg, they contain two or three vascular bodies called corpora lutea, and which by some are called the eggs.

OVER-DONE, OVER-RIDDEN, or OVER-WORKED. A horse is said to be thus when his wind and strength are broken, and he is cruelly exhausted with fatigue.

OVER-REACH. A horse is said to have got an over-reach, when he has cut his fore-heel with the point of his hind shoe. This wound, when only superficial or slight, is in general easily cured by washing it clean, and applying any simple ointment: but it should be observed, from the nature and manner of the injury, where the blow has been smart, that it differs widely from a common cut. The part then being both torn and bruised, consequently requires to be properly dressed. For this purpose, after washing out any dirt or gravel with soap-suds, &c. apply to the wound common digestive on dossils of lint. Over this, a turnep poultice should be applied, if the inflammation be great, binding all on with a compress and roller. If any sinuses appear that cannot conveniently be dressed to the bottom, they should be laid open, and the hoof should be kept supple, or pared away, when the growth of it interrupts this end, as sometimes is the case.

OVIDUCTS, i. e. FALLOPIAN TUBES. See the latter.

OVIPAROUS (from *ovum*, an egg, and *pario*, to bring forth), are all such creatures as lay eggs, and are hatched from thence. See OVA.

OX, a castrated bull. The natural history and diseases of this animal have been generally considered under the articles BOS and CATTLE. We cannot however neglect so favourable an opportunity of detailing the observations of Mr. John Lawrence on the subject of employing oxen for draught, which he has treated with great judgment. The use of oxen in draught would be a national benefit. He says,

Mr. Culley, and his partner, employ one hundred and fifty draught oxen in their husbandry, after thirty years' experience of their utility: they use them in carts single, and two in a plough, with reins, and no driver. Mr.

Culley's advice is, not to mix oxen with horses, on account of the inequality of their steps.

Thus, it is not a matter of speculation, but of experience and proof, that all the labour of husbandry may be well performed by oxen; and surely, if the only objection, that of their being somewhat slower than horses, can never be surmounted, there are other considerations of weight sufficient to overbalance it. A greater number of them may be kept to forward labour, and that, instead of being an extra charge (as would be the case with an extra number of horses) to both individual and public emolument. The balance in favour of individuals must be indeed great, if we reflect that three oxen may be purchased for less money than one good cart-horse; that the latter is liable to be worn out, and to become of little or no worth, whereas the former never wear out, but the last stage of their useful lives is as profitable as the first.

The method proposed by most people, desirous of effecting this advantageous change in our agricultural economy, is by the interference of government, either by the way of restrictive taxation, or absolute prohibition; means which ought never to be resorted to, in any similar case. There is, however, a species of coercion perfectly legitimate, that of the lord of the land over his tenant; and Mr. L. submits it to public-spirited landlords, whether, in granting leases, it would not be an act of public duty, to stipulate for the employment of draught oxen upon their farms to a certain extent. Such a clause would be an advantageous change for the impolitic one of compelling the tenant to make summer fallows.

But it will be asked of those who are sanguine in recommending the use of bullocks for labour, to point out where such may be had, and that with little trouble too; for it is well known to those most conversant with his character, that honest John Trot would not be induced to step a single inch out of his accustomed track by a prospect of the greatest advantage; nay, would even regard the man with a kind of religious hatred, who should presume to point it out to him. The oxen broke for draught are few; and in numberless situations, particularly out of breeding counties, a man must send five or six score miles to obtain them. This inconvenience must be obviated by the body of landlords, and by our great experimental stock-breeders; on whom it depends to raise an improved species, in sufficient numbers for general use, and to divulge the best methods of breaking and training them to labour. The old-fashioned

wooden yoke has been long laid aside, and experience shews that oxen draw best in breast collars; indeed their harness differs very little from that of the horse, and any collar-maker can very easily furnish them.

The improvement having obtained thus far in the field of husbandry, and having surmounted its greatest difficulty, it is scarce possible but it must even, by contagion, reach the other departments of public service. Stage waggons are not required to move quick; and if we must give up a few hours in a journey, surely both the proprietors and the public would be amply recompensed for a little lost time, by the exchange of wholesome beef for unprofitable carrion. Teams of oxen were set up years ago, in this service, which did not succeed, but were again exchanged for horses; but little stress will be laid upon this by persons versed in the uncertain nature of experiments. The species of cattle might be improper, and we have reason to suspect they were not kept in sufficient good condition. The expected improvement in carriages, from the multiplication of wheels, may possibly have the additional good effect of promoting the use of oxen. All persons concerned in carriages will do well to attend to what Mr. James has said upon the subject.

With respect to the brewery, upon a small scale, or in the country, all the business of draught required in such a situation may be equally well performed by oxen as by horses: a considerable improvement of that concern, since their bullocks, after having worked a sufficient time, might be fattened with their own grains.

How far oxen might be useful in the hurry and bustle of a London porter-brewery, those concerned must be the most proper judges; and there can be no doubt that those gentlemen would be ready enough to catch at any considerable alleviation of the immense expence of horse-keeping, the annual amount of which, in a great house, is a noble revenue.

Often has it been wished it were possible to extirpate the whole race of those Belgic locusts, the heavy cart-horses, and to divide the duties of slow-draught between polled oxen and cast-off machiners. It would be an act of mercy, and securing a kind of retreat for these last, particularly when employed upon a farm; for which reason, we should wish to see them a somewhat wider and squarer race. After all these fine speculations, we fear we must have a few Suffolk punches, to draw us through, when deeply set in heavy roads.

Mr. Lawrence also says, an ox-team ploughs



an acre in eight hours, performing the day's work with full as much ease and dispatch as a team of horses. The oxen are exceedingly handy, and may be driven with a heavy load to a hair's breadth. His informant is in the habit of carting lime from the distance of seventeen miles, both with ox and horse teams; and the former usually beat the horses by about an hour in the journey, taking the carts faster up the hills. Oxen, by trial, have walked more miles in a given time than cart-horses. They are fed (the oxen) with hay and chaff, and but little corn is required for them.

The neat cattle, both of Herefordshire and Shropshire, are a superior species in respect to form as well as size; the latter have the preference for the dairy; the former are reared to great size and beauty, by the judicious and spirited breeders of that county; and annually command extraordinary prices, as grazing stock, in Buckingham and Oxfordshire. In Herefordshire they put their bullocks to work at two years old, continuing them until five or six; but as, during the late excessive prices of stock, every resource has been anticipated, working oxen have been commonly sold to go to keep, at three and four years old. The price of a young bullock, fit to break for harness, before the war, was from ten to seventeen pounds, since which it has been more than doubled. Indeed the price of live stock of all kinds has been high of late, and was on the commencement of the year 1797, so exorbitant, as scarce to seem deserving of credit; now the price is in some degree moderated.

The ox being an animal of a meek and gentle spirit, and easily intimidated, it is highly necessary to use the utmost mildness and forbearance in breaking him in to labour, and indeed in driving him ever afterwards; a rash and mad-headed driver will soon spoil the tempers, and lower the worth, of the best team of bullocks. They are apt to conceive attachments and antipathies, and to take alarm at persons who have treated them ill. On first beginning to plough with oxen, it is advisable to engage a driver who is their countryman, and has been accustomed to attend the species.

In Sussex, the use of oxen for the plough is general, and they perform well upon the stiffest clays of that county; it has even been asserted, that they hang better to the collar, in a long day, than horses. The Sussex beasts are slower than the Hereford. Some farmers have put their bulls to work with advantage.

Now if accounts are to be relied on, there are

oxen to be found nearly, if not altogether, upon a par with horses, both at plough and on the hard road, notwithstanding no improvement in the breed, for that express purpose, has ever been attempted; and it has never yet been the custom to feed them well, or to aim at getting them in high condition, as we do horses. On that account it probably is, that bullocks are sometimes so dull and faint, and liable to such dangerous accidents, from being over-fatigued at work.

In Holland they keep their cows curried as fine as racers, and Mr. L. has been told, they clothe them upon turning them out. He thinks our labouring beasts ought to be kept within doors in winter, fed with corn, and dressed as carefully as horses.

The fair question is, does an additional annual product of corn throughout the island result from the labour of horses, sufficient to reimburse their superior expence, and to counterbalance the profit of slaughtering the oxen, after their period of labour shall have expired? We should suppose the negative of the proposition most probable, and that we are merely sacrificing to our prejudices, and to the venerable idol custom, in using such multitudes of draught horses. Of the further possible improvement of the breed of oxen, in point of activity, Mr. L. does not hesitate to speak with confidence; nor to aver, there are many farms (he allows they are not in Norfolk or Suffolk) the whole ploughing and carting business of which might be to the full as well performed, in all respects, by oxen, as with horses.

Yet Mr. Lawrence candidly acknowledges, that the farmers of Essex assert the superiority of horses, and even the almost impossibility of making any tolerable shift with oxen; at the same time, he believes none of them have ever *made the experiment*. But in Hampshire, a considerable farmer, keeping an equal number of horses and of oxen for the plough, found *little or no difference* in their services. In Northumberland, Mr. Cully, after thirty years' experience, keeps one hundred and fifty draught oxen, using them two in a plough, with reins and no driver, and in carts, singly. In Middlesex, an ox team of the slowest kind, having little or perhaps no corn, ploughed three quarters of an acre per day, where the horse-team did an acre. These bullocks also carted hay to London, returning as usual with dung. In Herefordshire, the oxen, with very little corn, beat the horses both at plough and upon the roads, which are very hilly and stony. In Sussex, oxen are used at plough

with the greatest success. In many parts of the west of England, oxen are preferred to horses, for both kinds of labour.

"From these data," says Mr. Lawrence, "every one is at liberty to draw his inferences; but let it be considered, that the number of horses employed in agriculture, and for the different purposes of slow draught, in Britain, probably exceeds one million five hundred thousand, and that if only one half of these could with propriety be changed into good wholesome beef, how immense must be the saving; it being taken into the account, that the time approaches, with fearful strides, when national economy alone can save us from impending destruction. In two respects, we may perhaps pretend to some little originality of thinking on this subject; to wit, on the more liberal feeding, and the breeding the ox to greater speed. Every one who has entered into the philosophy of laborious exertion, and attended the practice, whether in men or animals, must be convinced how much it depends upon ample and solid nutriment. Every adept in the mysteries of the stable well knows how contributory are cleanliness, and keeping the perspiration open and free, by regular diurnal frictions, to the nimbleness and hilarity of the animal. In regard to raising a variety of the ox, with the qualification of more than the usual activity, where should be the difficulty, since we have been long accustomed to vary and mould him at pleasure into such differing shapes and forms, as caprice or interest has prompted? Perhaps those gentlemen who have been in the habits of breeding horses for the turf would succeed best in this pursuit: it is of great national importance, and not unworthy attention."

Mr. Arthur Young, in the "Annals of Agriculture," after stating, that the labouring ox, with proper management, gains two or three pounds per year, whilst the horse grows annually worse, observes, "that the ox requires no oats, and, instead of hay, is generally contented with straw." This, however, Mr. Lawrence suspects, may have a tendency rather to retard, than forward, the public object of employing oxen. For the grand objection to bullocks for labour being the want of expedition, he thinks this can never be obtained from any animals, without solid and generous keep.

Masgal, farrier to James I. says, "that oxen were generally used and esteemed superior to horses, for the plough, in his days; he mentions disorders brought upon working oxen by poor keep, and their being subject in consequence to lie down in the furrow, when they were with difficulty got up again; he recommends for

them, barley in the straw, which will, he says, keep them lusty and strong; also to curry them like horses, and constantly wash their feet and claws. It was the custom in those days to work barreners. The ancients occasionally purged their labouring oxen.

"Mr. Young speaks of a *hornless* breed of Devons, of a red colour, near Bridport. To this place recourse may be easily had by a curious breeder. In breeding the ox for labour, the required points are, clean and fine head and neck, deep shoulder, wide quarters, thin skin, silk coat; and those qualities must be sought among the Herefords, Yorkshire short-horns, North Devons, and those of Sussex. There are exceeding fast walkers amongst the Yorkshire cows; and some well formed for labour, which appeared to be bred between Norman or Alderney stock, and Yorkshire. Equal activity of exertion at dead pulls, or ability to lift great weights, with our best cart-horses, must never be expected in the most improved breed of oxen; at the same time it must be conceded, those qualities are not our material objects of pursuit."

**OXALATES**, are salts formed by the combination of the oxalic acid, with the different alkaline, earthy, and metallic bases; there are twenty seven species enumerated in M. Fourcroy's Elements of Natural History and Chemistry.

**OX-FEET**, in a horse, is when the horn of the hind foot cleaves just in the very middle of the fore-part of the hoof, from the coronet to the shoe: this, though not common, is very troublesome, and often makes a horse halt.

**OX-LEGS**, an imperfection in some horses, which, though they have the back sinew of their fore-legs somewhat separate from the bone, yet their sinews are so small and so little set off, that their legs will become round after short labour.

**OXYCRATE** (*οξύκρατον*), vinegar mixed with such a portion of water as is required, and rendered still more active by the addition of honey.

**OXYCROCEUM** (from the same as the foregoing, and *κρόκος*, *crocus*, *saffron*), a plaster in which there is much saffron, but no vinegar unless for dissolving some of the gums.

**OXYDS** (from *οξύς*, *acidum*), substances formed by the union of oxygen with a basis: thus it is with the oxyds of iron, copper, &c.

**OXYGEN** (from *οξύς*, *acidum*, and *γεννῶμαι*, *ignor*). The base of pure or respirable air is termed *Oxygen*, because, in reality, one of the most general properties of this base is to form



## O X Y

acids by combining with many different substances: and this process is termed *Oxygenation*. The union then of oxygen with caloric is called *Oxygen Gas*, which is the same as was formerly called *vital air*. See *GAS*.

**OXYMEL** (ὀξύμελι, from ὀξύς, *vinegar*, and μέλι, *honey*). Honey and vinegar, formed into syrup, is called *Simple Oxymel*. An example of this kind of preparation occurs in the oxymel of verdigris, formerly called *mel Ægyptiacum*.

### *Oxymel of Verdigris.*

Take of Prepared verdigris, one ounce;  
Vinegar, seven ounces by measure;  
Clarified honey, fourteen ounces by weight.

## O Z Æ

Dissolve the verdigris in the vinegar, and strain through linen; then add the honey, and boil down the mixture to a proper consistence.

The complaint of the diversity of the strength of the different parts of the *mel Ægyptiacum* is in this preparation perfectly removed. It is intended chiefly as an external application for cleansing foul ulcers, and keeping down fungous flesh.

**OZÆNA** (ὀζæνα, from ὀζω, *olfacio*, to smell rank), an ulcer in the inside of the nostrils, that yields a fetid ichor. Gibbon describes a disease in the nose of the horse similar to this. See the article *NOSE*.

## P.

## P A C

**P** is put, in the physician's Latin prescription, for *pugil*, which is the eighth part of a handful; and sometimes for *parts*.

**P. Æ.** is used to signify *partes æquales*, equal parts of any ingredients.

**P. P.** was formerly used in prescriptions, for *pulvis patrum*. Jesuit's powder, so called, because they first brought the *bark* into Europe.

**PABULUM**, signifies, strictly, the food of cattle; but is, by Willis, and some later writers, applied to such part of our common aliment as is necessary to recruit the animal fluids, and likewise to any matter that continues the cause of a disease.

**PACE**, a certain manner of motion, or progression, of a horse. The natural paces of a horse are three, viz. a walk, a trot, and a gallop: to which some add an *amble*, because some horses have it naturally. See the articles *TROT*, *GALLOP*, &c. For the artificial paces in the manege, see the article *AIRS*. Horses that mix their paces, that is, shuffle betwixt a walk and an amble, are seldom of any value. The defect proceeds from their fretful fiery temper; and sometimes from a weakness either in their loins or legs.

## P Æ D

**PACK-HORSE**, a horse, whose employment is to carry a heavy load on his back in the form of a pack. In the *Rustic Dict.* we have the following instructions as to the choosing a horse for the pack or hampers, which, no doubt, are very suitable. "Let him be strong limbed, but not tall, with a broad back or ribs, full shoulders, and thick withers: for if he be thin in that part, there will be great difficulty to keep his back from galling. Be sure that he takes a large stride, because the horse that does so goes at the greatest ease, and rides his ground the fastest. In ordering the pack horse, neither he, any more than the cart horse, need any walking, washing or fasting, but they must be dressed well, and fed well; and their shoes and backs must be attended to. The best food for them is hay, chaff and peas, or oat-hulls and peas, with chopt straw and peas mixed together. To give them warm grains and salt, once a-week, will not be amiss, because it will prevent worms, and such-like disorders."

**PÆDARTHROCAE** (from παῖς, a boy, αἰθρον, a joint, and κακον, an evil), the joint-evil; intimating that this disorder frequently appears about the joints of young animals, and

oftener in them than in adults, because their bones are more soft and spongy, and therefore more easily corroded by morbid humours, and distended into tumours, sometimes of a very surprising deformity. Severinus calls the *spina ventosa* by this name; he also makes another distinction between the *spina ventosa* and the *pædarthroace*, for the tumours of the first kind are frequently attended with pain, redness, and all the appearances of inflammation; but the *pædarthroace* has little or no pain in the beginning, as is observed in ricketty children; but these names are used very promiscuously; by some it is used to express a kind of anasarca. Dr. Cullen places it as a variety of the first species of *Phlogosis*, under *Phlogosis phlegmons*.

**PAIN**, an uneasy sensation excited in a part of the body by the progress of disease. Pain may be considered as, in many instances, promoting the disease from which it arises. It is therefore material to the cure, in such cases, to alleviate pain by every possible means.

Mr. RYDING, speaking of pain arising from external affections, says, "Pain in general is only a consequence of inflammation, though sometimes it may be a means of continuing it, in proportion as the sensibility increases. Poulitices of the simplest kind should be used, such as bran and warm water, or linseed meal; the latter of these is preferable, from its not being so liable to become lumpy, and from not becoming four. Opium and other applications, such as preparations of lead, are often used. When the parts are very irritable, these may allay pain. If opium is used externally, it ought to be administered very freely; for if it is applied in small quantities, it will sometimes increase the irritability. Lead not only tends to lessen the action of the parts, but also to lessen the powers, by producing permanent weakness. Cold is a great sedative, but, if long continued, may produce mortification. Other applications, as decoctions of bryony or wormwood, acids, as vinegar, the vitriolic and muriatic acid diluted, may be used with good effect."

**PALATE** (*palatum*, from *palo*, to hedge in, because it is as it were staked in by the teeth); sometimes called *cerebri basis*. It is that arch of the mouth, in animals, which is surrounded before by the teeth and gums, and extends backward the whole breadth of the upper part of the mouth, as far as the great opening of the pharynx. This arch is partly hard and immovable, and partly soft and moveable. The solid part is formed by the two ossa maxillaria, and the two ossa palati. The soft

part lies behind the other. The membrane that lines the palate is full of small glands.

**PALATI OSSA**, bones of the palate. See **MAXILLA SUPERIOR**.

**PALATINUS**, a branch of the upper maxillary branch of the fifth pair of nerves; it runs before the pterygoid apophyses of the os sphenoides in the canal formed by the os maxillare and os palati; and through the foramen palatinum posterius, it spreads in the glandular coat of the palate and parts adjacent.

**PALATUM**, the palate. See **PALATE**.

**PALATUM MOLLE**. Behind the bony palate lies the soft palate, from the middle of which the uvula hangs down.

**PALEA**, chaff, in botany, a thin membrane springing from a common receptacle, which separates the florets from each other.

**PALIURUS** (from *παλλω*, to move, and *ουρον*, urine), *Christ's-thorn*, or *wild-jujube*; also called *anoplia*; *rhamnus*. It is a species of thorn met with in the southern parts of Europe. The leaves and roots are moderately astringent and diuretic, whence its name.

**PALLASIA**, a genus in Linnæus's botany. There is but one species.

**PALLIATION**, the quieting of pain, and opposing the worst symptoms of a distemper, when the cause of it is beyond our reach. We call the medicines used for this purpose palliatives.

**PALMÆ OLEUM**, **PALM-OIL**. This oil is procured from the kernels of the fruit of a species of palm-tree (the *Cocos butyracea*, Lin.), which is a native of the coast of Guinea and Cape Verd islands. From these places it has been transplanted into Jamaica and Barbadoes. The oil, as brought to us, is about the consistence of an ointment, and of an orange colour; a strong, not disagreeable, smell, but very little taste. By long keeping, it loses its high colour, and becomes white; when it ought to be rejected, as no longer fit for use. The inhabitants of the Guinea coast are said to make this oil part of their food, and to employ it for the same purposes as we do butter. With us, it is used only in some external applications, and is little better than lard.

**PALMARIS**. Two muscles in the human subject are thus named. The *palmaris longus* arises from the internal extuberance of the humerus, and by a long and slender tendon it passes above the annular ligament to the palm of the hand, where it expands itself into a large aponeurosis, which cleaves closely to the skin above, and to the sides of the bones of the



metacarpus below, and to the first phalanx of the fingers; by which it makes four cases for the tendons of the fingers to pass through. There is also the *Palmaris Brevis*, or *cutaneus*, a muscle that lies under the aponeurosis of the first. It arises from the bone of the metacarpus that sustains the little finger, and from the bone of the carpus that lies above the rest. It goes transversely, and is inserted into the eighth bone of the carpus. The first assists the hand to grasp any thing closely, and the second makes the palm of the hand concave.

**PALM OIL**, a yellow or orange-coloured substance, resembling butter. It is the produce of the *Palma*, called in Jamaica the *Mackaw tree*. The Negroes say, that the *great mackaw-tree* yields the true palm-oil. The fruit is pressed, or first bruised, and then boiled in water; by either of these methods the oil is obtained. See **PALMÆ**.

**PALPEBRÆ** (*à palpitando*, from their frequent motion), the eye-lids. These, in most quadrupeds, are similar to the eyelids in man. They are connected to the circumference of the socket by the tunica conjunctiva. They are composed of the common teguments, a cartilage called tarsus, and an external membrane. They have two angles or corners, one the small or external, the other the large or internal; these angles are called canthuses. The form of each eye-lid is that of a segment of a circle, and, in regard to the eye, is such, that when both eye-lids are shut they make an uniform arch, adapted to the convexity of the eye, and in contact with it; but in regard to one another when shut, their edges are so contrived, that they leave a sort of groove or channel between them, which is narrow toward the outward angle, and wider towards the inner, and serves to conduct the tears as they come from the upper part of the eye to what are called the lachrymal points. The margin, or basis of each eye-lid, being a cartilage of a considerable thickness, is divided into the outer and inner edges; it is the outward edge only of each lid that is supposed to join when the eye-lids are shut, the inner edge being formed oblique or slanting, makes the groove, or channel, above mentioned, for the passage of the tears to the lachrymal points. This margin is the tarsus, and that in the upper eye-lids is the broadest. The cutis is very thin on the eye-lids. The outer edge of each eye-lid is furnished with a row of hairs called cilia. On the internal edge of each lid in the tarsus is a row of small holes, which are the excretory ducts of the ciliary glands. From the upper

edge of the upper tarsus, and the inferior of the lower, is contained a membranous expansion to the neighbouring edges of the orbit; each of those membranes, together with its respective tarsus, has the form of the eye-lid to which it belongs, and is called ligamentum tarsi. The ligaments of the eye-lids are reckoned to be three; from the inner angle to the nasal process of the os maxillare superius, we see one which is the tendon of the orbicularis; at the external angle we see another ligament, more diffused on the bony brim, blended with the cellular membrane; a third goes all round, proceeding out of the brim of the orbit from the periosteum. The inside of the eye-lids is lined by the **ADNATA**, which see. The muscles which subserve the motions of the eye-lids are the orbicularis, and levator palpebræ superioris. The eye-lids and their muscles are furnished with branches from the angular, temporal, and frontal arteries, and these communicate with those sent to the internal membrane of the eye-lids. The levator palpebræ receives a branch from the internal maxillary artery. The veins correspond very nearly with the arteries, and carry their blood into the external jugulars, by means of the veins in the temples and face. The nerves proceed from the ophthalmic branch of the fifth pair, from the superior maxillary branch of the fifth pair, and from the portio dura of the seventh pair; the levator palpebræ superioris receives a branch from the third pair. The eye-lids defend the eyes from the light during sleep; they preserve the eye from becoming dry by their frequent motion, which spreads the tears over the external surface of the globe. See **EYE**.

**PALPITATION**, is a beating or panting, and often used for that alteration in the pulse of the heart, upon frights or any other causes, as makes it felt: for a natural uniform pulse goes on without distinction or variation.

**PALSY**, an abolition of voluntary motion, or of feeling, or, more commonly, of both together. The distinctions made by physicians in this disease are noticed under **PARALYSIS**.

On the palsy, as it affects the horse, Gibson makes the following remarks. He considers it as having an affinity with the apoplexy, epilepsy, &c. in so far as the nerves are affected in both, but with this difference, that in cases merely convulsive the muscles are strongly contracted by involuntary motions; whereas in paralytic disorders the nerves seem to have lost their sensibility. "In a palsy," says he, "the use of some part of the body, or sometimes, when it derives its origin from the head, the use of one

whole side, is taken away, the parts are flaccid and relaxed, without any capacity of motion, and sometimes without sense or feeling, in which respect a palsy affects the body in a manner quite different from an epilepsy. When the palsy seizes one whole side, it is called hemiplegia, and when single parts or members are only affected, it is called paralyfis particularis," or *local* palsy. It is known by the use of some particular member in a horse, being totally, or in part, lost; particularly the limbs, sometimes only one, sometimes more, and especially the hind legs. This kind (Gibson says) is pretty usual, and tremors or shakings sometimes attend in such cases; but of the many horses he had under his care, he did not notice above two that were seized with the hemiplegia, or that kind of palsy that seizes *all the muscles on one side*. Yet in the year 1743, many horses were seized with a nervous disorder that very much resembled an hemiplegia. This chiefly affected one side, and even pulled their faces somewhat awry, being of a mixed kind, partly paralytic, and partly convulsive. Of this an account is given under the article EPIDEMIC.

When the palsy seizes one limb only, it is not often dangerous, and is less so when there is a continual shaking and an involuntary motion; but when it seizes both limbs behind, the case is then very troublesome, and the horse is not able to stand, but when he is supported by some means or other, until he has recovered the use of his limbs, at least in some degree. In an hemiplegia the use of one side is totally taken away, and the horse falls suddenly; and though at first he will strive very much to rise, yet it is neither in his own power, nor in the power of man, to raise him up so as to stand; for though a horse can move his limbs on one side, yet he has not the least power on the other, and his muscles are so flaccid and relaxed on the paralytic side, that when he falls his limbs double under him; and this case in a horse is so desperate, that there can scarce be any possible way of recovering him.

Horses that lie out late at grass upon cold clay grounds often come up with numbness in their limbs, which they in some degree lose the use of for a season; but this is not a true palsy, unless the head is also affected, but it is rather a case of rheumatism. In a true palsy there is generally a very fizy state of the blood, proceeding for the most part from high feeding and want of sufficient exercise, from bad provender, from noxious fumes, or from bad air. Sometimes, on the other hand, it arises from too hard working and want of good keep, and not

unfrequently from mere old age, which last is the most irremediable of all. When paralytic disorders happen to old horses that have been delicately kept, or, on the contrary, have been in bad keeping and hard worked; if the disease seizes one whole side, it is scarcely worth our while to attempt a cure. If the palsy seizes only particular parts in old horses, the cure will be difficult, and for the most part only palliative; for there will always remain somewhat of numbness and insensibility in those parts, which will render such horses of little use. But paralytic symptoms in young horses, proceeding from the other causes we have enumerated, are often removed without much difficulty.

In curing the palsy, Gibson advises the same internal remedies that are made use of in APOPLEXY, and in convulsive disorders. Here also he thinks it proper to bleed, rowel, and use outward applications, such as warm stimulating embrocations, &c. As one of the best of this kind, and what he frequently applied with good success in paralytic numbnesses, he states the following:

*Stimulating Liniment.*

Take of Oil of turpentine, four ounces;  
Oil of bays, four ounces;  
Camphor, rubbed in a mortar, one ounce;  
Oil of amber, three ounces.  
Incorporate these together into a liniment; to which may be added, if needful,  
Tincture of cantharides, one ounce.  
Mix.

Let the affected part be first well rubbed with a woollen cloth, that the liniment may penetrate with the more ease; then take a sufficient quantity and anoint the part with it thoroughly, working it well in with the hand, and as fast as the liniment sinks in, renew it. This method we are advised to continue till the numbness goes off, and the horse shows that he has recovered the use of his limbs. "If the numbness and lameness be chiefly in the hind parts, in that case the liniment may be also rubbed into the spine of the back and loins, from whence the principal nerves that go to the limbs derive their origins; but in this case the tincture of cantharides should be omitted. Rubbing the parts often is of great use in all such cases, and therefore ought never to be neglected. If the head be affected on one side, so as to draw the horse's mouth awry, the forehead, temple, and cheek on that side ought also to be well rubbed and embrocated with the



above liniment, and when this is the case, internals ought not to be laid aside; because we may suppose, with good reason, that the distemper has taken its rise from the head. If a vertigo happens, or if the lameness be universally on one side, but not an universal deprivation of sense and motion, as in the hemiplegia or dead palsy; in the first, viz. in a vertigo, all objects seem to turn round, so that a horse, while any sense remains, with the least use of his limbs, will naturally follow the object of his motions. In such a case, all those things that have been recommended for the cure of an apoplexy are also proper, with rowels and outward applications. In the latter, viz. when the lameness is altogether confined to one side, the horse by leaning on the sound side will also turn round towards the lame side, having the use of his limbs on the sound side to support him, but not so freely on the other; but as this may happen without a vertigo, the best remedy here is mild purging, and a liberal use of embrocations. A mixture of mustard seed, fresh ground, with camphorated spirits frequently rubbed into the diseased limbs, will be of great use, viz. an ounce of the mustard seed to half a pint of the camphorated spirits, and towards the latter end of the cure opodeldoc (see that article) may be used with good success. If a lethargy happen, which is not unusual in the distempers of the head, few evacuations will be required; besides, now and then a clyster, with rowels on the neck and under the jaws, and the use of cordials and cephalics, are necessary in all lethargic symptoms, as castor, assa foetida, salt of hartshorn, sal armoniac, and all other volatiles; but this can only be done to horses that are of some value."

Modern writers on the veterinary art have not noticed this disease in their works; and the reason probably is, that the cases of it are rare, and the animals, when so affected, not worth preserving.

PANACEA (πανακεια), a term first given by Galen, to some medicines he had a great opinion of. The word coming from παν, *omnis, all*, and ακεραια, *sano, to make well*, denoted their uniform and irresistible efficacy against all diseases; and many medicines, in the chemical pharmacy particularly, were long in the shops under this name.

PANARIS, the whitlow.

PANADA, a mixture of bread and water together; probably thus called from panis, *bread*.

PANAX, GINSENG, a genus in Linnæus's

botany. He enumerates five species. The college have introduced the root of the *panax quinquefolium*, Linn. or Ginseng, into their Pharmacopœia.

PANCREAS (from παν, *all*, and κρεας, *flesh*), the *sweet-bread*, so called from its fleshy consistence. It is situated, in most animals, transversely under the stomach, in the duplicature of the posterior portion of the mesocolon, and reaches from the duodenum to the spleen. Its shape resembles a dog's tongue. It has two edges, one anterior, the other posterior; and two sides, one superior, and the other inferior. Its head lies in the first curvature of the duodenum, thence it runs across the spine to the spleen behind and below the stomach. There is a natural cavity into the epiploon, between the lower sides of the stomach and the upper side of the mesocolon. It is here that the arteries, veins, and nerves enter, and the cystic and hepatic ducts come out to form the ductus communis cholidochus, which goes into the duodenum near the pancreatic duct. The vessels of the pancreas come from those of the spleen, which run along it. That head next the duodenum has vessels from the mesentrica and gastrica dextra. The substance of this viscus is that of the conglomerate gland; in the whole length of it is a duct called ductus Wirsungii, from its discoverer, but generally it is spoken of by the name of ductus pancreaticus: its beginning is towards the spleen; as it goes on it receives branches, grows larger, and proceeds into the duodenum, in the same canal as the biliary duct. The pancreatic duct is very thin, and without valves; it does not always go out jointly with the biliary duct, but it is seldom that we meet with it otherwise. Malpighi makes the pancreas a cluster of vesiculæ; Ruysch makes it out to be vascular, as injections prove it to be. The nerves come from the plexus hepaticus, plexus splenicus, plexus mesentericus, &c. The pancreatic juice resembles the saliva, but is less viscid, and contains a larger proportion of the salts of the blood; it is probably a menstruum for the solution of the aliment; but that it acts as a ferment, as some have asserted, is doubtful. All the pancreatic juice is sent into the duodenum, and is secreted most when the stomach is fullest. This viscus is subject, like the spleen, to inflammation, called pancreatica, and must in the same manner be treated, if it can be ascertained, which, however, is seldom the case even in the human subject.

Where the great extremity of the pancreas is connected to the duodenum, it sends out an

elongation, with a distinct duct in it, which opens into the duodenum: this is called the *lesser pancreas*.

The splenic artery runs from the celiac artery, under the stomach and pancreas, to the spleen; it adheres to the lower posterior part of the pancreas, to which it gives several branches called *pancreaticæ arteriæ*. The *pancreatic veins* are several branches from the splenic, which run to the pancreas along its lower side. There are other small pancreatic veins which do not arise from the splenica.

**PANICLE**, or **FLESHY PANICLE**, or **CARNOUS MEMBRANE**, a thin muscular covering attached to the skin in brute animals, by means of which they have the power of shaking it so as to throw off any thing which adheres to the hairy coat and occasions uneasiness. Gibbon's account of this superficial muscle is given under the article **CUTIS**. See also Plate VI. and the explanation under the article **EXTERIOR**. The *fatty panicle* is synonymous with **CELLULAR MEMBRANE**, which see.

**PANNELS OF A SADDLE**; two cushions, or bolsters, filled with cow, deer, or horse-hair, and placed under the saddle, one on each side, so as to touch the horse's body, and prevent the bows from galling or hurting his back.

**PANTON-SHOE**, or **PANTABLE-SHOE**, an old invention, contrived for receiving narrow and hoof-bound heels. Its sponges are much thicker on the inside than on the outside, so that the part which rests upon the horn, or hoof, runs sloping to the end, that the thickness of the inside of the shoe may bear up the heel, and throw or push it to the outside. Panton-shoes are described by *Guillet* to be proper for horses that have false quarters.

**PAP** (from *pappa*, a *dug*), the *nipple*; also called *mamma* and *mamilla*. Thus the little eminences on the breast are called. In children of both sexes, and in the males of all ages, they are commonly no more than cutaneous tubercles. In females arrived at the age of puberty the nipple begins to increase; in pregnant women, and those who give suck, it is large; in old age it decreases and becomes flabby. The body of the nipple contains the terminations of the tubuli lactiferi, where they are tortuous, and act as valves; but as they are distensible, as the nipple is squeezed, they become straight, and thus the milk has a free passage.

**PAPAYER**, the *poppy*. See **POPPY**.

**PAPILLÆ**. In the kidneys, and many other parts of an animal, are parts called *papillæ*, from their likeness to a nipple or teat.

**PAPILLARY PROCESSES**. The extremities of the olfactory nerves inserted into the mucous membrane of the nose are thus named. Other parts are also termed *apillary*.

**PAPULA** (a dim. of *pappa*, a *dug* or *nipple*), a *pimple* or *ulcerous tubercle*. A very small and acuminate elevation of the cuticle, with an inflamed base, not containing a fluid, nor tending to suppuration. Dr. Cullen places it as a variety of *phlogosis phlegmone*.

**PAR** (*παρ*, *near*), when applied to days, signifies *even*; when used in prescription, it signifies a *pair*, or two. Some medicines and vessels are called *sine pari*, without an equal.

**PAR VAGUM**, the eighth pair of nerves from the head, which are also called *nervi vagi*, *nervi sympathetici medii*. This pair is made up of several small chords which come from almost the whole length of the medulla oblongata, and being joined with the *accessorius Willisii*, which is a small cord running up laterally from the medulla spinalis, passes through the foramen to join this eighth pair, which goes out by that common hole between the temporal and occipital bones, where likewise the internal jugular vein goes out of the cranium. The *par vagum* goes down the neck, by the side of the carotid arteries, and behind the internal jugular, and is accompanied by the intercostal nerve to the last cervical vertebræ; thence passes down into the thorax, gives branches to the pharynx, larynx, &c. and joins many nerves. As they enter the thorax they go across the subclavian arteries, and, as the right trunk passes before the subclavian, it sends off a twig, which bends backwards under the artery, and runs up the side of the *aspera arteria*; this is called the *recurrent nerve*. Afterwards the *par vagum* runs down behind the lungs, to which they give a plexus, and then form two cords, one anterior, the other posterior, which are called *nervi stomachici*, which pass along the oesophagus through the aperture in the diaphragm, and are dispersed on the stomach, &c. See **NERVES, SYSTEM**, and **PLATE XXIII**.

**PARA** (*παρά*), a Greek preposition which, when prefixed to the name of a disorder, denotes its slightness; as *paraplexia*, a slight apoplexy.

**PARACENTESIS** (from *παράκεναι*, to make a perforation, called also *compunctio*). This operation, not often required in the diseases of brutes, is that of tapping, which is used in a dropsy of the abdomen, for discharging water through the integuments. The place appointed for the perforation is about four fingers' breadth from the navel, or rather in the middle betwixt



the navel and the upper part of the os ilium. The left side is usually preferred, on account of not running any risque of injuring the liver. Tapping may be performed on any other cavity containing a fluid; for instance, in the chest.

**PARACUSIS** (from παρακουω, *non rectè audis*), depraved or faulty hearing. Dr. Cullen places this genus of disease in the class locales, and order dyssæsthesiæ. He distinguishes two species: 1. *Paracûsis imperfecta*; in which sounds are difficultly distinguished. 2. *Paracûsis imaginaria*; as when the sound perceived is not from without, but is excited within the ear. It is called also *susurrus*; *syrismus*, *syringmos*.

**PARACYNANCHE** (παρακυνανχη, from παρα, *κυν*, a dog, and αγγχω, *to strangle*), a species of quinsy; that being a distemper to which dogs are subject.

**PARADISI GRANA**, grains of paradise. They have erroneously been supposed to be the seeds of the larger cardamoms, whence they are called by some cardamum maximum; by others, *malegueta*, *malaguetta*, *melegeta*, *melleguetta*, *maniguetta*, and *cardamomum piperatum*. They are brought from Guinea and the East Indies. They are angular, of a reddish brown colour without, and white within; smaller than pepper; in appearance somewhat resembling cardamon seeds. They grow in pods, shaped like unripe figs, and about the size of one. This pod is divided internally into three cells, in each of which are contained two rows of seeds. They have the flavour of cardamoms, and the pungency of pepper: their pungency does not reside, like that of cardamoms, in their essential oil, but in their resin. The distilled oil possesses their smell, but is mild; the remaining decoction inspissated to an extract retains all the pungency. In some parts, these grains are used instead of pepper. Dr. Grew thinks, that the cajeputi oleum is extracted from them, which is commended as a nervous medicine, and deemed useful in some cardialgias; the dose four or five drops in any convenient liquor. As to their medicinal virtues, they are precisely of the same nature with the femina cardamomi, though rather more pungent.

**PARAGLOSSA** (παραγλωσσα) a prolapsus of the tongue, the tongue being so swelled as to stretch out of the mouth.

**PARAGOGE** (παραγωγη), signifies that fitness of the bones to one another, as is discernible in their articulation; and bones which are thereby easier of reduction, when dislocated, are, by Hippocrates, called παραγωγοτερα.

**PARALYSIS** (from παραλυω, *to dissolve or weaken*), a palsy; often it signifies a palsy of a

particular part. It is also called *catalysis*. Ancient writers give the name of *attonitus morbus* and *stupor* to that species which follows an apoplexy. Dr. Cullen places this species of disease in the class Neuroses, and order Comata, which he defines a loss or diminution of the power of voluntary motion, but only affecting certain muscles or parts of the body, often accompanied with drowsiness. He distinguishes four species. 1. *Paralysis partialis*; when some particular muscles are affected. 2. *Paralysis hemiplegica*; when one side of the body is affected longitudinally. 3. *Paralysis paraplegica*; when one half of the body is affected transversely, as both legs and thighs. 4. *Paralysis veneralis*; when too powerful sedatives are applied externally, or taken internally.

The apoplexy, hemiplegia, and palsy, are so nearly connected, that they may be considered in one view. In the beginning, the palsy which is caused by an excess of blood, is acute; but it soon becomes chronic: the other palsies are all, and at all times, chronic. See **PALSY**.

**PARAPHIMOSIS** (from παρα, *de*, and φημι, *to tie with a bridle*). φημι signifies properly a *stricture*, such as the neck of a purse; called also *periphimosis*. It is when the prepuce is drawn back behind the glans penis, and cannot be drawn over it.

**PARAPHRENITIS**, an inflammation of the lower part of the mediastinum, or membrane that separates the two lobes of the lungs; accompanied often with an inflammation of the whole diaphragm. It takes its name from φρεν, which signifies the *mind*, the ancients giving that name to the diaphragm, because an inflammation of it is usually attended with delirium and convulsions, symptoms which are owing to the infinite number of branches of the phrenic nerves, that are displayed all over it. Horses are frequently subject to these inflammations, which however are not to be distinguished, in them, from pleurisy or peripneumony, and may be treated in the same manner. Gibson states the only difference to consist in this, that when the diaphragm is highly inflamed, a horse will sometimes be what is called "jaw-set," and his mouth so firmly closed, that nothing either of physic or sustenance can be got into it. Of this, he says, he saw an instance in a horse, "where both the diaphragm, lungs and mediastinum, were inflamed to a very great degree. The lungs on their under side were quite broken and mortified, and the lower part of the mediastinum and the whole substance of the midriff were black, its tendinous

parts green, with livid spots all over the bowels."

"On examining the carcases of dead horses," continues he, "I have observed them to be subject to all these different kinds of inflammatory affection. I have known matter formed under the pleura, on one side, make its way through that membrane, in great abundance, into the cavity of the chest, in colour and consistence resembling the grounds of beer. In horses that have died of a peripneumony, and have not been sufficiently bled in the beginning, I have seen the whole substance of the lungs extremely black and full of gangrened water, and great quantities of blood have flowed out of the ascending and descending trunks of the large blood-vessels when cut. In other cases, several abscesses of different size had formed, both towards the surface, and deep in the substance of the lungs; but I have never observed the lungs in a horse adhering to the pleura, as is frequent in men, though I have seen many hydatidical tumours or blisters, which when broken generally give rise to that coalition. But when horses receive such injuries in their lungs as to produce these, they will be apt either to prove mortal, or else, if the degree of inflammation happen to be but small, the business required of a horse, which is calculated to keep his lungs in strong action, together with the horizontal position of his body, may perhaps not admit of their growing to any part of the pleura."

**PARAPLEGIA** (*παραπληγία*, from *παρα*, signifying something injurious, and *πλησσω*, to strike); a *paraplegy*, or palsy of all the parts below the neck. In Hippocrates, it seems to signify a palsy of any particular part, in consequence of apoplexy or epilepsy.

**PAREGORIC ELIXIR**, now called *tinctura opii camphorata*.

#### *Camphorated Tincture of Opium.*

Take of Hard purified opium,  
Flowers of benjamin, of each one drachm;  
Camphor, two scruples;  
Oil of aniseeds, one drachm;  
Proof spirit of wine, two pints.

Digest them for three days.

This is useful in coughs in the human subject, and may not be improper in the same complaint in other animals.

**PAREIRA BRAVA**, vel **PARERYRA** (Span.); also called *convolvulus colubrinus*, *botou*, &c. Wild vine. It is the *cissampelos pareira*, folis peltatis cordatis emarginatis; Cl. **DICÆIA**, Ord.

**MONADELPHIA**, Linn. Gen. Plant. It is the root of an American climbing plant, brought from Brasil, generally in crooked pieces of different sizes, from that of a man's finger up to that of a child's arm. The outside is brownish, and variously wrinkled; the internal substance is of a pale, dull, yellowish hue, and interwoven, as it were, with woody fibres, so that on a transverse section there appears a number of concentric circles, crossed with striæ, running from the centre to the circumference. There is a white species; the bark of the root of it is white, and the substance within appears like the root of liquorice. This root has been in high esteem as an attenuant and diuretic.

**PARENCHYMA** (from *παρεγχυω*, to pour into). Erasistratus is said to have introduced this term to signify all that substance which is contained in the interstices betwixt the blood-vessels of the viscera, which he imagined to be extravasated and concreted blood. According to some, any of the viscera through which the blood is strained. The substance of the liver has been named *parenchymatous* by anatomists.

**PARESIS** (from *παριημι*, to relax), a palsy of the bladder, when the urine is either suppressed or discharged involuntarily. It is now generally, however, understood to be an imperfect paralysis.

**PARIETALIA OSSA** (from *parietes*, walls), because they defend the brain like walls. So the bones of the scaput are called. See **BONES**.

**PARING**, an operation performed by the farrier on a horse's foot with a view to adapt it to the shoe. This is done with a butteris, and frequently to the great prejudice of the foot. The original design of shoeing horses was undoubtedly intended as a preservation of the hoof, and a defence of the sole; but no one could think it necessary to pare away what he wanted to preserve by the use of shoes, because that would be to act contrary to his first principles, and destroy his own work. This preparation should never be permitted, but in cases where the horny sole is uneven, inasmuch that the shoe will not otherwise bear equally upon the foot, which would take off from its necessary firmness. In such a case, perhaps, it may be reasonable, otherwise it would be very absurd and injurious. The farrier usually holds the horse's foot between his knees, in which posture he pares the foot, sets on the shoe, drives the nails, and rivets them; and all this without any assistance.

**PARORCHIDIUM** (from *παρα*, and *ορχις*, the testicle); a detention of the testicles in male



animals, as when they have not yet descended into the scrotum. The testicles are sometimes detained in the body; this case is called *cripforchis*; *cryptorchis*; or *concealed testicles*. What happens in the young of the human species will sufficiently illustrate this subject. Sometimes the testicles (one or both) are detained in the groin: usually about the time of the child's birth they descend into the scrotum; in some instances a little before birth, in others soon after. But this is very uncertain with respect to different persons; also in the same person the two testicles will considerably vary as to the time of their descent. Sometimes one, at others both, are detained in the belly, or stick in passing through the groin. These accidents happen and continue a longer or lesser time after the birth; and in some instances never pass down into the scrotum. No particular inconvenience arises either to men or brute animals from the detention of a testicle within the cavity of the belly; but the lodgment of it in the groin renders it liable to be hurt by accidental pressure in the former. There is no kind of disease to which the testicle is liable in its natural situation, but what may also affect it in any or all its unnatural ones. Many instances have occurred, in brute animals, of a detention, or rather an unnatural attachment, of the testicles. This subject is noticed under the article *HERMAPHRODITE*, which see.

**PAROTIS** (from *παρα*, near, and *ος*, the ear, or from *παρα*, and *ωρ*, genitive of *ος*, the ear), the parotid gland. See *MOUTH*.

**PAROXYSM** (*παροξυσμος*, from *παροξυνω*, exacerbo, to aggravate); the height or fit of any distemper that returns at certain times.

**PARSNIP**, a well-known esculent vegetable, the roots of which afford excellent food for cattle, though the carrot is usually preferred.

**PART**, in the old manege, in French, *partir*, a term used to signify the motion and action of a horse when put to his full speed. From the horse's parting to his stop there is commonly two hundred paces of ground.

**PARTHENIUM**, feverfew, a species of *Matricaria*. This is the species formerly used in the shops.

**PARTURITION** (from *parturio*, to bring forth), labour, or the bringing forth of a young animal. This process, in different species of cattle, is distinguished by different names. Thus, cows *calve*, mares *foal*, &c. See *BREEDING*. No less difference occurs as to the periods when these are delivered of their burden.

The cause and mechanism of labour may be illustrated by enumerating some of the particu-

lars that happen in human parturition. The labour commencing, by the womb, with its contents, sinking lower down, certain efforts are made by nature, which, from their exciting pain, are usually called *pains*. In the beginning, these are slight, and the intervals considerable; but after several of these efforts, the uterus begins to contract, and a glary mucus discharges from the vagina. After this, the pains become more severe, return more quick, and continue longer. The mouth of the womb opens, its edges grow thin, the membranes protrude with the waters, dilate and widen the orifice; the foetus at each pain is urged forwards by the compressed waters. Towards the end of labour, the succession of pains is rapid, and the efforts violent. The tumour formed by the waters distending the membranes below the mouth of the womb, dilates the parts, until at length it bursts and discharges the waters. If the foetus presents fairly, it stops the discharge of the remaining waters. Sometimes the same effort which bursts the membranes expels the young, and terminates labour: at others, the interval is long before the delivery. The head having passed the os internum, enters the vagina, which widens in proportion as it shortens; the perinæum is vastly stretched, and even sometimes torn in the passage; the nymphæ are obliterated, and the labia pudendi are turned inward, and confounded in the general distension. At length the head forces the os externum, and the body readily follows, with the rest of the waters, mixed with blood. At this last period the animal is soon relieved by the expulsion of its young; after which there is a calm, until returning efforts are exerted for the exclusion of the placenta, &c. called *secundines*. Hence it appears, that parturition demands the concurrence of several agents. The cause and determination of labour is the first, and this is in the womb itself; the womb contracts, and compresses whatever it contains, in such a manner as forces it to escape by the part which makes the least resistance, which is constantly by the vagina. The womb is, in all quadrupeds, muscular, and reticulated; some of its fibres run uniformly parallel upon the inner surface of the womb, from the fundus to the neck; others diagonally crossing upon these, and others again horizontally interlaced, and closely woven towards the fundus. The uterus, in short, is capable of dilatation and contraction, like the bladder, and acts in the same manner, though more forcibly; the diaphragm and the abdominal muscles co-operating. The irritation which the womb suffers at the end of pregnancy is

what determines its action, and is the true cause of labour. Before conception, the cavity of the womb accords with its natural shape, which, in cattle, is *horned*, or branching into two parts. But the expansion once begun, continues with the growth of the foetus until the whole assumes a shape corresponding with its contents. At this period, the volume of the foetus still augmenting, the womb stretches beyond its limited dimensions, becomes irritated, susceptible of pain, and hence labour proceeds. The prelude to labour consists of gentle efforts of short duration; the womb essays its force, as it were, exactly filled, and meets with equal resistance on every side, except towards the orifice, where the sensation of the first pain begins. The contraction of the womb acting on the orifice distends its fibres, and causes pain; when the orifice is sufficiently dilated to let the head pass, the pain ceases, but it is renewed when the head enters the vagina, and stretches the fibres of these parts. Hence as the operation goes on in proportion with the increase of the foetus, which may be faster or slower, as well in the womb as after its birth, it is obvious that some animals may be protruded before the ordinary time, or their birth be protracted until after this term. However small the dilatation of the os internum may be, it will occasion a separation of the chorion from the uterus, and break the communicating vessels, so that the fluid, &c. that circulated between them will transude, and become the source of that mucous discharge by the vagina in the beginning of labour: and this separation, affected by gradation, will explain why the placenta retains its adherence until the last, though, in quadrupeds, it follows almost immediately. If the membranes are strong, their progressive separation continues until it arrives at the borders of the placenta, where the substance, adhesion, and resistance, being greater, the bag generally bursts.

With respect to natural as well as præternatural presentations, and also the management required in such cases, see the article OBSTETRICS.

PASSADE, in the manege, is a tread, or way, that a horse makes oftener than once upon the same extent of ground, passing and repassing from one end of its length to the other, which cannot be done without changing the hand, or turning and making a demi-tour at each of the extremities of the ground. Hence it comes that there are several sorts of passades, according to the different ways of turning, in order to part,

or put on again and return upon the same piste or tread, which is called *closing the passade*.

PASSAGE, in the manege. To *passage* a horse, is to make him go upon a walk or trot upon two pistes or treads, between the two heels, and side-ways, so that his hips make a tract parallel to that made by his shoulders. It is but of late that passing upon a trot has been used, for formerly the word passage signified walking a horse upon two treads behind the two heels.

A horse is passed upon two straight lines, along a wall or hedge: he is likewise passed on his own length upon volts, in going side-ways upon a circle, round a center, the semi-diameter being above his own length, so that he looks into the volt, and half his shoulders go before the croup. In all passing, the horse's outward fore-leg must cross or lap a great deal over the inward fore-leg, at every second time of marking. In a passage on a walk, and that on a trot, the motion of the horse is the same, only one is swifter than the other.

PASSAGE UPON A STRAIGHT LINE, a sort of manege practised but little in France, but very much in Italy, and yet more in Germany. For this they choose a horse that is not fiery, but has a good active motion, and leading upon a straight line, upon a walk or trot, they teach him to lift two legs together, one before and one behind, in the form of a St. Andrew's cross, and in setting these two to the ground, to raise the other two alternately, and keep them a long while in the air, and that in such a manner, that at every time he gains a foot of ground forwards. The beauty of passing consists in holding the legs long in the air. The motion of the legs in this passage is the same with that of a walk or trot, for they go in the same order; and the only difference is, that in passing upon a straight line the legs are kept longer in the air. For a passage there is so much art required, that a horse is two or three years in training to it; and of six horses, it is much if two succeed in it.

PASSION, in a medical sense, a morbid affection, or disease; hence *passio iliaca*, the *iliac passion*, &c. The term however is now obsolete.

PASTERN OF A HORSE, the part which intervenes between the joint of that name and the coronet of the hoof. This part should be short, especially in middle-sized horses; because long pasterns are weak, and cannot so well endure labour. Some horses indeed have them so long and flexible, that in walking



they almost touch the ground with them, which is a great imperfection, and shews the animal unfit for any sort of fatigue.

PASTER-N-JOINT, called also the *fellock* of a horse; the joint above the pastern, which serves for a second knee in each fore leg, and a second ham or hough to each hinder leg. A horse is long or short jointed, according to the shortness or length of the pastern, and the short-jointed is the best. See FOOT.

PASTIL, a little lump of paste, or ball, made to be swallowed. See BALL.

PASTURE. See the articles FOOD, GRASS, &c.

PATELLA (a diminutive of *patina*), the knee-pan, called also *rotula*, *scutiforme os*, &c. It is a flattened bone, situated at the anterior part of the superior joint of the lower extremity, or hinder leg of a horse. See Plate V. and the description of the bones "*of the lower limbs*," under BONES.

PATHETIC, an epithet applied to the fourth pair of nerves, because, in the human subject, they direct the eyes to intimate the passions of the mind. They are also called *trochleares*, and *musculi obliqui superiores*. They are the smallest pair in the body, and appear below the edge of the transverse processes; they pass by the side of the fella turcica, and go through the foramen lacerum orbitale superius, to the superior oblique muscle.

PATHOGNOMONIC (*παθογνωμονικος*, from *παθος*, a disease, and *γνωσκω*, to know); an epithet for a symptom or course of symptoms that are inseparable from a disease, and are found in that only, and in no other:

PATHOLOGY, PATHOLOGIA (from *παθος*, a disease, and *λογος*, a discourse), a term synonymous with MEDICINE. It is the art of preserving present, and restoring lost, health; more properly the last. It is usually divided into the following heads: 1. HYGIENE (from *υγιης*, sound or healthy); which is the first part of methodical medicine, being that which prescribes rules for the preservation of health. 2. PHYSIOLOGIA (from *φύσις*, nature, and *λεγω*, to treat of); that branch of medicine which considers nature with respect to the cure of diseases; particularly the animal body; its parts; their structure, connections, dependencies, functions, health, life, and economy; and depends much upon the knowledge of anatomy. 3. PATHOLOGIA (from *παθος*, a disease, and *λογος*, a discourse). This explains the nature of diseases, their causes and symptoms. But in order to understand a disease, we should consider the morbid causes, parts affected,

symptoms, crisis, diagnosis, prognosis. Hence is pathology divided into all these parts. See MEDICINE.

PATRUM CORTEX, i. e. *Cortex Peruvianus*, so called from the Jesuits (called *Fathers* in the church of Rome), who first spread its use in Europe.

PATTEN-SHOE, a horse-shoe so called, under which is soldered a sort of half-ball of iron, hollow within. It is designed for hip-shot horses, and put upon a sound foot, to the end that the horse, not being able to stand upon that foot without pain, may be constrained to support himself upon the lame foot, and so counteract the disposition, in the sinews, to contract the haunch.

Many ignorant pretenders, when a horse has been recently lamed in the shoulder, peg the other foot, or set on a patten-shoe to bring the lame shoulder upon a stretch; and some turn them immediately out to graze: but all this, as Gibson observes, is very preposterous, and the direct way to render him incurably lame; a patten-shoe being only necessary in old lamenesses, where the muscles have been a long while contracted.

PAULINA CONFECTIO. It is a warm opiate. The London College have called it *Confectio Opiata* in their Dispensatory.

PAUNCH, the first stomach in ruminating animals. See the articles QUADRUPEDS and STOMACH.

PAW THE GROUND. A horse is said to paw the ground, when his leg being either tired or painful, he does not rest it upon the ground. Spirited horses are also said to paw the ground when they shew an impatience to go on by throwing out one of the fore feet repeatedly.

PEASE, a kind of pulse given as food to horses and other animals. They are generally given freely to working horses in places where they grow in great plenty; and when hard and dry have a near affinity to beans. The pea-straw, or pea-haulm as some call it, which the farmers give to their cart horses, being a refuse that would lie on their hands, and be fit only for dung, if they did not put it to that use, is miserable, and often mischievous, provender. The farmers also give their horses a good deal of chaff among their oats, which is not amiss when it is sweet and fresh; but if it happens to be old and musty, it is apt to hurt them. And even the best chaff, when it is given in too great quantity to horses that do not work, makes them grow pot-bellied, and if long continued, will occasion disease. Pease

are, in their nutritious qualities, nearly allied to beans, and should be given under the same regulations. See **FOOD**. It is not certain, however, that they are equally liable to occasion the intestinal concretions described under the articles **CALCULUS** and **INTESTINAL**.

**PECTEN**, the pubes, or share-bone.

**PECTINÆUS**, or **PECTINALIS** (from *pecten*, the os pubis); a muscle which rises from the upper part of the os pubis, on the outside of Poupart's ligament, runs downwards, backwards, and outwards, and is inserted into the linea aspera below the little trochanter. This muscle in the horse is shewn in Plate XI. See description of the "*right lower limb*," under **HORSE**.

**PECTORALS**, medicines which are appropriated to disorders of the breast. Employed in that general sense, Dr. Cullen thinks it absolutely improper, and that it has certainly led to abuse. Though as it is at present commonly employed in the same sense as expectorantia, it perhaps might be allowed; but certainly the latter term, as more precise, ought to be the one commonly made use of. If the pectoralia may, with M. Lieutaud, be of three kinds, demulcents, astringents, and resolvents, it will be very obvious that the general term will be liable to much abuse.

**PECTORALIS** (from *pectus*, the breast). The *pectoralis major*, in the human subject, rises in a radiated manner from the anterior and inferior part of the clavicle, then from the sternum, and at the lower part from the third, fourth, and fifth ribs, from the cartilage, and partly from the bony portion of the sixth rib; then passes towards the arm, with its upper edge contiguous to the deltoid, betwixt which two the cephalic vein has its course; near its insertion the *pectoralis* doubles in on its lower edge, and forms a posterior and anterior lamella; then it runs to be inserted into the anterior part of the biceps groove. This muscle is partly a rotator of the arm, but its great use is to bring the arm forward, close to the body. In a horse, which has no clavicle, the arrangement is different. See Plates XII. and XIII. and the description of parts composing the "*shoulders and trunk*," under the article **HORSE**.

The *pectoralis minor*, which some call *serratus anticus minor*, lies beneath the *pectoralis major*. It rises by three digitations from the third, fourth, and fifth ribs, then passes obliquely upwards and outwards, and joins with the short head of the biceps, to be inserted into the carotid process of the scapula. Some make this a muscle of the scapula, others of respiration, according

as they make one or the other termination the fixed point.

**PECTORIS OS**, the **STERNUM**.

**PECTUS**, the breast, most strictly includes the whole cavity, commonly called by anatomists the *middle region*; but by some writers is more restrained to particular parts of that division. Also the metatarsus.

**PEDICULATION** (called *Morbus pedicularis*; by the Greeks, *φθειγιάσις*), a particular foulness of the skin, with a disposition to breed lice. See **LOUSINESS**.

**PEDIGREE**, the genealogy of a horse, a point much regarded by sportsmen. An example occurs in the celebrated horse Eclipse. See **ECLIPSE**.

**PEDILUVIUM** (from *pedes*, and *lavo*, to wash or bathe; *lavapedium*), a bath for the feet. In the human subject, baths for the feet are particularly useful in some affections of the head, and at the attack of febrile complaints. How far this practice is applicable to the diseases of brutes has not been adverted to.

**PELECAN**, an instrument for drawing teeth with; also a glass vessel formerly used in chemistry, for the digestion or circulation of liquors poured in at the narrow necks, which were afterwards sealed up.

**PELLICLE**, a film or fragment of a membrane, from

**PELLIS**, the skin, or hide of any creature.

**PELLITORY**, the anthemis pyrethrum *Lin.* It is usually called *Pellitory of Spain*, and the part used in medicine is the root.

This plant, though a native of the warm climates, bears the ordinary winters of this; and often flowers successively from Christmas to May. The roots also grow larger with us than those with which the shops are usually supplied from abroad.

Pellitory root has no sensible smell; its taste is very hot and acrid, but less so than that of arum or dracunculus: the juice expressed from it has scarce any acrimony, nor is the root itself so pungent, when fresh, as after it has been dried. Water, assisted by heat, extracts some share of its taste; rectified spirit the whole: neither of them elevates any thing in distillation. The principal use of pyrethrum in human medicine, in the present practice, is for promoting the salivary flux, by which means it often relieves the tooth-ach, some kinds of pains of the head, rheumatic complaints of the face, and paralysis of the tongue. How far it may be applicable to the diseases of brutes is uncertain, though Gibson includes it in his Farrier's Dispensatory.



**PELVIS** (from *πελὺξ*, a *basin*), a name for the inferior part of the cavity of the belly. It is bounded forward by the os pubis; backward by the os sacrum above, and coccygis below; laterally by the ilia above, and ischia below. See an account of these in the horse, under the article BONES; see also Plate V.

**PELVIS.** Several cavities in the body are called by this name: as the cavity in the kidneys; the cochlea in the ear; and the infundibulum in the brain, or *pelvis cerebri*.

**PENIS** (from *pendo*, to hang, vel *pendendo*, from its hanging down, because it hangs without the belly). See GENERATION.

**PENNYROYAL**, the *mentha pulegium* of Linnæus. This plant grows spontaneously in several parts of England upon moist commons, and in watery places; trailing upon the ground, and striking roots at the joints. Our markets have been for some time supplied with a garden sort, which is larger than the other, and grows upright.

Pennyroyal is a warm, pungent herb, of the aromatic kind, similar to mint, but more acrid, and less agreeable. By physicians it has long been held in esteem, as an aperient and deobstruent. For these purposes, the distilled water is generally made use of, or, what is of equal efficacy, an infusion of the leaves. It is observable, that both water and rectified spirit extract the virtues of this herb by infusion, and likewise elevate a great part of them in distillation. We cannot attribute any material powers to pennyroyal as a veterinary remedy, though it frequently occurs in the prescriptions of the old writers, and Gibson describes it as a general deobstruent, and particularly of service in the jaundice in horses.

**PENTAPHARMACON** (from *πεντε*, *quinque*, five, and *φαρμακον*, *remedium*, *remedy*), any medicine consisting of five ingredients.

**PENTAPHYLLUM**, *cinquefoil*. It is the *Potentilla reptans* Linn. This plant is well known as fodder for cattle.

**PEPPER.** See PIPER.

**PERCOLATION**, straining through (from *per*, *through*, and *colo*, *to strain*); it is generally applied to animal secretion, from the office of the glands resembling that of a strainer, in transmitting the liquors that pass through them.

**PER DELIQUIMUM**, i. e. by melting. Kali, or salt of tartar, dissolved in the water which it imbibes from the air, is called *oil of Tartar per deliquium*.

**PERENNIAL**, strictly signifies any thing which lasts all the year (the word importing only so much, from *per* and *annus*), as those ve-

getables which shed not their leaves in the winter, commonly called *evergreens*; but by some writers it is used much in the same sense as *continual*, and applied to fevers which have no intermissions.

**PERFORANS MUSCULUS**, is a muscle that arises from the upper and back part of the tibia, and passing under the inner ankle and ligament that ties the tibia and os calcis together. It divides into four tendons, which passing the holes of the perforatus (the word importing boring or passing through), are inserted into the third bones of each lesser toe. In the human foot there is a fleshy substance that arises from the os calcis, and which joins the tendons of this muscle where the lumbricales begin.

**PERFORATION**, is the passing any one body through another, as a thing is bored through; but chiefly used by physicians for the penetrating by an instrument into any one of the great cavities, as in the operation of the paracentesis. Hildanus also uses it for such erosion of the bones as eats them through; and some other chirurgical writers for the opening any abscess by an instrument.

**PERFORATUS MUSCULUS**, also called *flexor brevis*, is a muscle that arises from the inner and lower part of the os calcis, and is inserted by four tendons into the second phalanx of each toe. These tendons are perforated, to give way to the tendons of the perforans.

**PERFRICATIO**, shivering, or coldness.

**PERICARDIUM** (from *περι*, *about*, and *καρδια*, *the heart*, called also *capsula*, *involucrum*, and *sacculus cordis*). See HEART. The first membrane of the pericardium is formed by the pleura, which is connected to the pericardium by a cellular membrane; but this is only an occasional covering, leaving the pericardium where it adheres to the diaphragm. The substance of the pericardium is a strong tough membrane, composed of two lamellæ, the external of which is by much the stronger; the internal is a complete bag, without perforation, being reflected over the heart itself. This internal coat contains the fluid called liquor pericardii, which was supposed to be secreted by glands lodged there, but is certainly secreted by the small continuations of the arteries. In sound habits this liquor is found in a small quantity; in morbid animals we find a larger quantity: its appearance is like serum a little tinged with blood. The redness is owing to the transudation of the blood in the muscular cavities of the heart; and the longer the body is kept, the redder the liquor grows. The use of the pericardium is to afford the liquor, and to confine the heart; and

as it is connected by a great surface of the diaphragm, perhaps it keeps the heart unmoved by the motions of the diaphragm in inspiration: but there is very little in this, as the middle of the diaphragm has not much motion in inspiration and expiration. The pericardium is rather larger than the heart; it is not fixed to the basis of the heart, but round the large veins above the auricles, before they send off the ramifications, and round the large arteries before their divisions. This membrane has its artery and vein; and is subject to different affections, particularly dropsy, inflammation, and suppuration.

**PERICHONDRIUM** (from *περι*, round, and *χονδρος*, a cartilage). The perichondrium is said to be only a continuation of the periosteum. This Dr. Hunter says may be true of that sort of cartilage which supplies the place of bone in an adult, as the trachea; or in such as supplies the place of bone in infants, as epiphyses; but on the cartilages that are expanded over the extremities of articulating joints the perichondrium is the inner layer of the capsular ligament, reflected over the cartilage extremely fine. This is not discoverable in adults; but in young subjects, where the parts are separable, it is very discernible.

**PERICRANIUM** (*περικρανιον*, from *περι*, about, and *κρανον*, the head). This is the membrane that covers the skull. It is a very thin and nervous membrane, of an exquisite sense, which covers immediately not only the cranium, but all the bones of the body, except the teeth; for which reason, it is also called the *periosteum*, from the former part as before, and *ος*, a bone. It is tied to the dura mater, by some fibres which pass through the sutures of the skull. It receives veins from the external jugulars, arteries from the carotids, nerves from the fifth pair of the brain, and from the second of the neck.

**PERINÆUM** (from *περινεω*, to flow round, because that part is generally moist); the space between the anus and the parts of generation. It is divided into two equal lateral portions by a distinct line, which is longer in males than in females. In the latter this part is greatly distended in the act of parturition. See **PARTURITION**.

**PERIOSTEUM** (from *περι*, about, and *οσσειον*, the bone; called by Læ Dran, *circumossilis*). It is that membrane which covers the bone, both in men and quadrupeds. It is divided by authors into two layers; the internal layer (or periosteum itself) lies close to the bone, and appears furrowed, as the bone is: this is one of the most delicate membranes imaginable; and appears, upon a successful injection, to be ex-

tremely vascular; the reason of which is, that the vessels which run to the bone play awhile upon the surface of this membrane, before they enter into the substance of the bone. The external layer is of a white glistening appearance. It is merely adventitious, being composed of the fibrous expansions of membranes, ligaments, and tendons; wherefore it runs in various directions, according as these tendons, &c. are variously inserted. The periosteum is not elastic; Dr. Hunter thinks it is not very sensible; and advises, in amputations, not to scrape it, but only to pass the knife about it, a little above the place where you intend to saw. The periosteum is wanting on those parts of a bone where strong tendons enter, as in the trochanter. The uses of the periosteum are, to prevent the bad effect of friction on the bones; to protect the vessels running into the bones; to connect epiphyses; and to give origin to muscles. The same membrane covering the skull, has the name of *pericranium*. See that article.

**PERIPNEUMONY** (*peripneumonia*, from *περι*, about, and *πνευμων*, the lungs); also called *pulmonia*. Both in men and brutes, the true peripneumony is produced by cold applied to the skin, or mouth, or stomach, when there exist inflammatory diathesis, an over-distension of the lungs, or any of the general causes of inflammation. Such causes as particularly affect the lungs are impure air, irritating matter in the atmosphere, or other hurtful exhalations, violent exercise of the lungs by inordinate muscular exertion, &c. The disorder once excited, various effects will be produced, according to the diversity of the part affected; for a bronchial inflammation by compression and contagion inflames the contiguous extremities of the pulmonary artery. When the extremities of the pulmonary artery are inflamed, the blood becomes stagnant, the vessel is distended, the thinnest part of the fluids is expressed, as it were, by transudation, and the thicker parts are accumulated; and all the blood, as yet capable of circulation, is collected between the right ventricle of the heart and the extremities of the pulmonary arteries: hence the lungs become oppressed, incapable of expanding, and are livid, the left ventricle of the heart is deprived of blood, a great weakness is brought on, with a variety of other urgent symptoms.

Inflammation of the chest, or of its contents, is always known by the fever, difficult breathing, cough, and pain in some part of the breast. In the horse, it is impossible to distinguish *peripneumony* from *pleurisy*, (see **THORAX**); and for this reason the treatment employed in



the latter becomes advisable. See the article PLEURISY. Mr. DENNY and Mr. RYDING, two of our latest veterinary writers, indeed, have treated on this disease in distinct chapters. The former, in his remarks on the pleurisy in horses, at the same time admits the almost indistinguishable resemblance of the two diseases, and the necessity of recurring to a similar treatment in each.

"In this disease the horse generally appears restless, and refuses his food for two or three days previous to the following symptoms; namely, fever, cough, with quick and painful respiration. The legs and ears are cold; the horse hangs back in the stall, with his head near the ground, but never lies down.

"As the disease advances, the breathing becomes more quick, and the cough worse, with partial sweats over the body. The legs and ears remain cold. On the fourth or fifth day, a matter of various colour, often tinged with blood, is discharged from the nose.

"The causes of the disease are a sudden change of temperature in the atmosphere; the drinking of cold water, after being heated by exercise; exposure to damp air; high feeding, and want of regular exercise; with wounds of the chest and lungs.

"The danger is in proportion to the degree of fever. When the symptoms resist the effect of proper treatment beyond the fourth day, death may be expected, as the disease generally terminates in gangrene, abscess, or effusion of blood in the lungs.

"If the symptoms be relieved by the third or fourth day, the cough becoming milder, with a discharge of mucus from the nose; the animal lying down, and having an inclination for food; a favourable termination may be expected.

"An immediate attempt must here be made to lessen the force of the circulation, by taking away three or four quarts of blood from the neck vein, and repeating it if needful.

"The horse should have an additional covering, especially about the head and neck. Give the following ball:

Take of Aloes, in powder, four drachms;  
Calomel, one drachm;  
Honey, enough to form the ball."

Here it may be remarked, that Mr. Denny's practice differs from what is laid down under the article THORAX, where inflammation of the lungs and pleura are stated not to admit of the use of active purging remedies. The author proceeds further to describe the treatment of peripneumony thus:

"About six hours after, the following febrifuge powder ought to be given in three pints of warm gruel, and repeated every six hours:

Take of Antimonial powder, half a drachm;  
Nitre, in powder, six drachms;  
Aniseed powder, half an ounce.  
Mix them.

"The larger intestines likewise should be cleared by clysters.

"The horse should be allowed a small stable, or the space of two or three stalls, of moderate temperature.

"The sides of the chest may be blistered, by rubbing on the part the following liniment:

Take of Cantharides, in fine powder, one ounce;  
Corrosive sublimate, in powder, two drachms;  
Olive oil, six ounces.  
Mix them.

"As soon as the inflammatory symptoms are abated, the powders may be omitted, and the following pectoral mixture given two or three times in the day:

Take of Linseed,  
Aniseeds, bruised, each one ounce;  
Licorice root, sliced, two ounces;  
Water, three pints.  
Boil for ten minutes; then strain,  
and add, of  
Nitre, in powder, half an ounce;  
Honey, two ounces;  
Tincture of opium, two drachms.  
Mix.

"Instead of putting the mashes into the manger, let them be given in a common nose-bag, suspended by a strap over the head. The horse will be obliged to breathe through the bag, and by so doing he will inhale the warm vapour from the mash, which will considerably increase the secretion of mucus in the windpipe, and relieve the cough.

"His strength must be supported by gruel, until his appetite returns; and observe that the care bestowed in the day be not rendered ineffectual by neglect in the night.

"As his appetite returns, small mashes, of two parts bran and one of malt, may be occasionally offered him. His drink should be either warm water or thin gruel. A small quantity of sweet hay may be allowed him once or twice in the day."

Mr. Denny advises, that the horse's allowance

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of food should be gradually increased, cautiously avoiding to overload the stomach; also that the stable and manger be kept clean, and the supply of bedding to be plentiful.

"The horse's nostrils," says he, "may be washed with vinegar and water several times in the day; and his legs bathed with the following embrocation during his confinement:

Take of Opodeldoc, three ounces;  
Spirits of turpentine, one ounce.  
Mix them.

"After the seventh day, walking exercise should be allowed for a few minutes; both the time and distance being gradually increased as the animal recovers.

"If the cough continue troublesome, place a rowel in the chest, and give the following pectoral ball, instead of the mixture, morning and night:

Take of Myrrh,  
Squills, of each, in powder, two drachms;  
Nitre,  
Sulphur, of each, in powder, half an ounce;  
Opium, one scruple.  
Honey, enough to form the ball.

"Lime or tar water should be given for common drink: and if there be any reason to suspect that the disease will terminate in broken wind, the food must be given in small quantities, at short intervals. In this case add ten grains of calomel to the ball."

Mr. Denny remarks, that the horse's recovery will be expedited by moderate exercise, and a strict attention to the quality and quantity of his food, with grooming, &c.; and, in conformity with the sentiments of preceding writers, he says, if there be any remains of cough, after the horse is otherwise in health, one or two doses of physic will be proper.

Mr. Ryding, after having described the causes and symptoms of inflammation of the lungs, nearly in similar terms, very properly cautions the veterinary practitioner against delay in the application of his remedy, especially that most important one, bleeding, on the mode of which he entertains an opinion, not destitute of singularity, though we are far from supposing it unfounded.

"If the action of the heart and arteries," says he, "be very great, there may be danger of suppuration or gangrene. In this case, bleeding from the vein on each side of the neck, at

## P E R

*the same time*, and from large orifices, should immediately take place. Three or four quarts taken away *in this manner*, will be found more beneficial than six or eight quarts taken only from *one vein*. If the pulse rise after this bleeding, which is often the case, we may venture to repeat it in sixteen or twenty hours after, or according as the symptoms may direct, and let the following medicines be given:

Take of Antimonial powder, one drachm and a half;

Nitre,

Cream of tartar, of each one ounce and a half.

Mix them well together, and divide into four parts."

One of these powders is ordered to be given, in a quart of linseed decoction, every two hours; the body being at the same time kept open with gentle stimulating clysters.

"The horse," says Mr. Ryding, "should be kept in a moderate degree of temperature, avoiding, as much as possible, his being exposed to a *current* of air. His clothing should be rather warm, and he would be best in a place where he could have the liberty to walk.

"His legs should be well rubbed, for half an hour, four or five times a-day, with a cloth; and his diet should be warm mashes of bran, or warm water-gruel.

"If by this method of treatment the symptoms do not abate in two days, it will be necessary to take away a little more blood, and endeavour to prevent the formation of matter taking place in the lungs, by administering such medicines as powerfully determine the blood to the kidneys and intestines, and which also, by bringing on purging, open the body, and finally remove the disease.

Take of Calomel, one scruple;  
Antimonial powder, half a drachm;  
Cream of tartar,  
Nitre, of each three drachms.

Mix them well together, and dissolve them in a quart of linseed decoction.

"This mixture may be given every two hours, until purging takes place; and its action may be promoted by the following clyster:

Take of Linseed, three ounces.

Boil it in four quarts of water, half an



hour; pass the decoction through a coarse cloth, and dissolve in it

Aloes, in fine powder, half an ounce.

This clyster, a little warm, is ordered to be thrown up the rectum two or three times a-day. By this method of treatment (our doubts of which are here, as in a foregoing instance, equally applicable), we are assured that "purg- ing generally takes place in twenty-four hours, and the disagreeable symptoms gradually sub- side."

"A rowel on each side the chest," continues the author, "will likewise be found very useful in promoting resolution."

"After the action of the physic is over, and until all the symptoms of the disease are completely removed, it will be necessary to keep the body open; for which purpose, the above-men- tioned clyster may be used every other day, and the linseed decoction, with the nitre, cream of tartar, and a few grains of the antimonial pow- der, may be continued with advantage."

It may be proper to add, that, where the above method of practice has been adopted on the first appearance of inflammation of the lungs, Mr. Ryding asserts, that it has always answered his "highest expectations;" and even that "it has often been found to remove the disease in its more advanced stages."

Mr. Feron attributes inflammation of the internal viscera, principally, to a sudden transi- tion from a cold to a *hot* temperature; but never, or very seldom, the reverse, *viz.* a hot to a cold one. "The lungs," he says, "much more than any other organs, are the most sub- ject to be diseased by this cause in the horse; even more so than in the human species. It is also much more violent, and is likewise different in some respects. Pleurisy producing adhesions is very general in the former, but it is seldom that adhesions are found in the horse; and the reason why an inflammation of the lungs, and of other parts, goes on so rapidly in the horse, is the great muscular power of the heart and arteries, which occasions the termination of the inflammation in gangrene and mortification, which is a very rare occurrence in the human subject."

In the treatment recommended by this writer, some circumstances occur which are not men- tioned by preceding writers.

"All the most powerful means of resolution," says Mr. Feron, "should be employed, on the discovery of the disease; copious bleeding, and that quickly from a large orifice, is what we chiefly depend upon, to the quantity of five or

six quarts at once, which answers better than the common practice of drawing three pints or two quarts, as practised by farriers, grooms, &c. Previous to bleeding, the pulse is oppressed; but it soon becomes strong and full, by the re- moval of the distention of the vessels on bleed- ing, and, if the evacuation is continued, it be- comes weak.

"We must endeavour also to bring on an ex- ternal irritation on each side of the chest and legs, by blistering or firing (or perhaps both) on the region of the lungs; at the same time introducing one rowel under the chest, and another under the belly: the four extremities are to be well stimulated with oil of turpentine, twice a-day: it is also recommended by Mr. Coleman to stop the circulation in the veins by external compression. The same ingenious au- thor recommends also inflating the cellular membrane under the skin of the chest with air, so as to bring on inflammation; and, if this does not succeed, to inject some stimulating fluid, as oil of turpentine, as the best stimulus. From the trials he has made, he conceives it may turn out a most valuable discovery, in this disease particularly; which trials I have myself made, and found it to be the most salutary re- medy in this fatal disease."

Internally, the author says, diuretics are used with advantage.

Take of Tartarised antimony an ounce and a half;

Opium, a drachm;

Calomel, fifteen grains to a scruple.

Make them into a mass, with linseed or liquorice powder, and treacle. The dose to be repeated twice a-day.

"During all this treatment, we must inject two or three large clysters of warm water, every day; and, at the same time, the animal must be kept in a warm stable and well clothed; his diet must be of good warm gruel, for his drink; and he must take no exercise whatso- ever, during the inflammatory state of the dis- ease."

"After the termination of inflammation of the lungs, a collection of coagulated lymph is frequently left in the cavity of the chest unab- sorbed: or a common anasarca of the lungs occurs, from the present inaction of the ab- sorbent vessels, which had previously been excited so violently."

The difficulty of breathing produced by this, Mr. Feron says, is to be cured by the following; which must be repeated every morning; and as long as necessity requires.

Take of Vitriolated copper,  
Common turpentine, of each two  
drachms;  
Linsed powder, a sufficient quantity to give the ball a proper consistence.

Blisters must be continued in the course of the windpipe and on the chest.

**PERIPNEUMONIA NOTHA** (from *περι*, about, *πνευμων*, the lungs, and *νοθος*, spurious); the spurious or bastard peripneumony. In most symptoms, the spurious peripneumony resembles the true, but the heat, pain, and thirst, are not so considerable in the first as in the last. These minute distinctions, however, cannot be traced in the inflammatory affections of the chest in brute animals. See THORAX. Gibson says,

"Though the peripneumonia notha, or *bastard* peripneumony, is also classed with these diseases by medical writers, yet it is scarcely to be distinguished, in a horse, from a true peripneumony, except in this, that there is great sluggishness without much pain or fever, the peripneumonia notha proceeding from a fizy blood, the whole substance of which abounds with a viscid serum, in which respect it also approaches near to the nature of an asthma. As in men this happens chiefly to worn-out constitutions, and sometimes carries them off very suddenly, so in old horses that have died suddenly we may often observe, upon examining their bodies, scarcely any thing like blood, but the vessels of the lungs, where the blood is generally most florid, filled with a matter resembling jelly or paste; some parts of them being flatulent and loose, others shrunk and dried, or inclining to a schirrus, a state evidently incurable."

**PERISTALTIC MOTION** (from *περι*, *στελλω*, *contraho*, to contract), that vermicular motion of the bowels which is made by the contraction of the spiral fibres of the intestines, whereby the excrements are pressed downwards, and voided.

**PERISYSTOLE** (*περισυστολη*), a pause or intermission between the systole and diastole, which is, by some, denied to be perceived in healthy animals, but when dying, it is very sensibly felt in them.

**PERITONEUM** (*περιτοναιον*, *περιτονειον*, from *περι*, *τεινω*, *circumtendo*, to stretch round). This, both in men and brutes, lies immediately under the muscles of the lower belly, and is a thin and soft membrane, which incloses all the bowels contained in the lower belly, covering

all the inside of its cavity. Its external superficies is unequal, where it adheres to the transverse muscles. The internal is very smooth and polished; it has a number of small glands that secrete a liquor which supplies the intestines, and facilitates their motion. When these glands are obstructed, the peritonæum grows thick, as may be seen in several dropsies. The upper part of this membrane covers the diaphragm, to which it closely adheres: the forepart of it strikes to the transverse muscles, and linea alba; the lower part of it to the os pubis, and the backpart of it to the os sacrum, and vertebrae of the loins. It is a double membrane, and contains in its duplicatures the umbilical vessels, the bladder, the ureters, the kidneys, and the spermatic vessels, to all which it gives a covering, as also to the liver, spleen, stomach, intestines, and womb. Its external lamina has two productions, like two sheaths, which pass through the rings of the oblique and transverse muscles in the groin, for the passage of the spermatic vessels in men, and for the round ligaments of the womb in women. These productions being come to the testicles in men, dilate and form the tunica vaginalis. The internal lamina, which is here very thin, having accompanied the external productions a little way, cleaves close to the spermatic vessels, and round ligaments of the womb. The peritoneum has veins and arteries from the phrenic, from the mammillary, the epigastric, and often from the spermatics. Its nerves are those which are distributed in the muscles of the abdomen. It has likewise a few lymphatics, which discharge themselves into the iliac glands. By the elasticity of its fibres, it easily dilates and contracts in respiration and conception. If it yields, it causes a rupture either in the groin or navel. Its use is to contain the bowels of the abdomen, and to give each of them an outer coat.

**PERITONITIS**, inflammation of the peritoneum, including the mesentery and omentum.

**PERONÆA ARTERIA** (from *peronæus musculus*), the peroneal artery. In the human subject, it is the smaller division of the posterior tibialis; it passes down behind the fibula, between the soleus and the flexor pollicis, passes over the interosseous ligament, and about the upper and back part of the os calcis it forms an arch with the tibialis posterior. The peronæa posterior artery in the horse is shewn in Plate XXII. See, under the article **MUSCLES**, the description of parts composing "*the lower limbs*."

**PERONÆUS MUSCULUS** (from *perone*;



the *fibula*). See this muscle, in the horse, in Plate XIV. also the description of muscles "in the trunk," under the article HORSE.

PERRIWINKLE, a plant not included in the *materia medica*, but, in France, supposed to possess some efficacy in the cure of the glanders in horses. Mr. St. Bel's success, however, in the trial of it (see the article GLANDERS), was not such as to recommend it to notice. It is one of five species of which the genus *vinca* of Linnæus consists. Which of these was employed by Mr. St. Bel does not appear.

PERONE (from *περιω*, to fasten; so called because it fastens the tibia and muscles together), the *fibula*.

PERSPIRATION (from *perspiro*, to breathe through), called also *transpiration*, *diaphoresis*, and, vulgarly, *sweat*. Without a free perspiration no animal can continue in a healthy state. The matter of perspiration is separated through the skin, and also from the lungs. It is simply aqueous, containing only a small portion of salt.

Perspiration is of two kinds, viz. that which is imperceptibly transuding, and is called *insensible*; the other, which is sensible, is called *sweat*. It has been supposed that different vessels throw off these discharges, but that is not the truth; the same vessels which throw out the insensible, being more strongly acted upon, throw out the sensible perspiration also. The coats of all the vessels are perforated by the pores through which the matter of perspiration passes.

As the diseases which arise from obstructed perspiration are sometimes rapid in their progress, Mr. Clark's general remarks on some of the most prevailing, or most dangerous, cannot but be useful in this place.

"Horses generally," he observes, "are more exposed to this accident after they have been overheated, more especially when they have been improperly treated, or wholly neglected, as very commonly happens.

"When the animal is overheated by active exercises, or by too violent labour, the circulation of his blood is carried on through the vessels with uncommon rapidity. Breathing, consequently, becomes more laborious to him, and more frequently repeated; whilst, at the same time, the secretion, from the pores of the skin, is considerably increased on the surface of the body, and transpires in humid steam like smoke. It is sometimes so profuse as even to run down, as if water had been poured on the animal's body.

"As perspiration is very liable to be suddenly checked by cold, whether applied by a current of cold air, by water thrown upon the body,

or by the horse being plunged into it, this secretion is apt to be retained in the body, where it occasions a variety of diseases, which either affect the system in general, as is the case in fevers, or when more local, affecting the muscles with rheumatism. Hence, in the shoulders, neck, and legs, stiffness and lameness occur. When it affects the internal parts, it occasions colic or diarrhoea. If it settle on the lungs, it produces cough, catarrh, peripneumony, &c. When the pleura is attacked, the most violent pains or stitches, with difficulty of breathing, take place (see PLEURISY.) When the glands of the throat, there is swelling and inflammation, threatening the animal with suffocation, and sometimes suppuration of these glands. When it falls on the wind-pipe, or the pituitary membrane which lines the cavities of the nose, disorders peculiar to these parts take place, such as the GLANDERS." On the latter, which deserves the particular attention of every veterinarian, Mr. Clark makes many judicious remarks, and has with great accuracy, as we think, considered the enlargement of the contiguous glands (though a circumstance which gives name to the disease) a mere secondary symptom.

"In all the dissections I have made on glandered horses," says he, "I never found these [the sublingual] glands affected; but the submaxillary glands that are situated between the jaw-bones on the outside are always more or less swelled, inflamed, or indurated, according to the length of time they have been affected, or the virulence of the disease; they likewise discharge their lymph into the mouth, as in the human body; and their being constantly swelled in glandered horses, according as one or both sides of the pituitary membrane is affected, may arise from the same cause which produces the swelling of the inguinal glands, in the groin of the human body, in a gonorrhoea; that is, from the absorption of the virulent matter affecting them, and occasioning that swelling, induration, &c. Hence it is evident, that the swelling of the submaxillary glands in glandered horses, and of the inguinal glands in the groin of the human body, in a gonorrhoea, are only symptoms of these disorders."

Mr. Clark is of opinion, that this disorder may proceed from cold affecting the pituitary membrane which lines the cavities of the nose, &c. "for it generally may be traced to its very beginning, from *some cold affecting the head*, and which has either been ill treated, or totally neglected. Hence, therefore, it will be evident, that this disorder, like many others to which

horses are liable, may be much easier prevented than cured, when once it has taken place." The necessity, he contends, is obvious, for paying proper attention to recent colds in horses; and for restoring the suppressed perspiration by keeping the head and throat warm, and not suffering the horse to go abroad before he is thoroughly recovered.

"When the pituitary membrane is affected with a recent cold," continues he, "the small glands which are dispersed throughout its surface become inflamed, and instead of secreting a thin lymph like pure water, which serves to lubricate and moisten the passage of the nose and cavities of the head, as is the case in health, they discharge a viscid mucus, which falls from the nostrils."

When this formidable disease is the result, or even a remote consequence, of obstructed perspiration, no one will deny the importance of Mr. Clark's injunction to preserve horses, by every prudent means, as well from the action of external cold, too frequently arising from currents of cold air or cold water applied to the surface of the body, as from the effects of too much cold water taken into the stomach at once. The same judicious writer, in his observations on suppressed perspiration occasioned by cold air being inspired into the lungs of horses, when they are much heated and agitated from violent exercise, says, "However dry and elastic the air may be that is drawn into the lungs of an animal body in respiration or breathing, yet, when it is discharged from them, it is evidently loaded with humid steams; and at the same time it loses considerably of its elastic quality. The moisture that comes from the lungs evidently flows, that a very great portion of thin lymph, or perspirable matter, is discharged from them at every respiration; and, as this action is increased and quickened by exercise, the discharge of this fluid will be the greater. But, as very cold air is apt to constrict or shut up the cuticular pores on the surface of the body, in like manner, when it is applied to the surface of the lungs, especially when they are overheated, it produces the same effect there; hence, that perspirable matter which should be thrown out from them is retained in the lungs, and produces colds, catarrhs, inflammation, and consumption."

The diseases produced by suppressed perspiration probably depends on these circumstances: 1. The degree of cold applied. 2. The longer or shorter period of its continuance. 3. The greater or less susceptibility of the body exposed to it. 4. The predisposition to disease at the

time. 5. Its partial or general application. 6. Its operation on distant parts by the medium of the nerves, or what is called *nervous sympathy*. The means of restoring this secretion are chiefly the application of warm clothing, and the internal use of sudorifics. See SUDORIFICS.

PERUVIAN BARK (from *Peru*, the place of its origin). See BARK.

PERUVIAN BALSAM, or BALSAM OF PERU. The tree which affords this is the *Peruifera*, vel *myroxylon peruiferum*, Linn. There are three kinds of this balsam, viz. 1. The white, of a pale yellowish colour (though called white). This is the *native balsam*, preserved as it issues out from the tree, and the best sort, but very rarely met with. 2. The *dry balsam*: this is the white sort inspissated by the sun's heat in gourd shells, in which it is sometimes brought to Europe. It is of a reddish colour, and of a very agreeable smell, but it is seldom to be met with. 3. The *common or black Peruvian balsam*, which is artificially extracted from the bark, branches, and leaves, of the tree, by cutting them in pieces, and boiling them in water. It is of the consistence of honey, of a dark black colour in the mass; but, when spread thin, it is of a clear reddish or yellowish brown, of an agreeable strong smell, somewhat approaching to that of a mixture of benjamin and storax, and of a bitterish pungent taste, easily inflammable, not in the least miscible with water, nor rendered white or turbid on being agitated with it. It is brought from Peru and Mexico.

Distilled in a retort with an open fire, it yields a butter like that of benzoin, and sometimes a considerable quantity of concrete saline flowers similar to those from the same resin. If this balsam is rubbed with sugar, the white of an egg, or with the mucilage of gum-arabic, it is rendered miscible with water, but is longest suspended with the last.

It is used for wounds in muscular and tendinous parts that are difficult of cure: it strengthens the stomach, is useful in asthmas, and as an antispasmodic.

PESATE, PESADE, or POSADE, in the manege, is the motion of a horse that, in lifting or raising his fore-quarters, keeps his hind-legs upon the ground, without stirring; so that he marks no time with his haunches, till his fore-legs reach the ground. This motion is the true means to fix his head and his haunches, to make him bend his fore-thighs, and to hinder him from stamping and clattering with his feet. In putting a horse to corvets, pesates should be his first lesson; for these are the foundation of all airs.



**PESSARY** (from *πῆσσω*, to *soften*). Among other external remedies used by Hippocrates, were pessaries. They were a kind of suppositories which he introduced into the exterior neck of the matrix in case of a prolapsus of that part, and also where there existed an incontinence of urine. They were prepared of wool, lint, or linen, mixed with powders, oils, wax, &c. and made round like a finger.

**PESTIS**, the *plague*, a distemper communicated by **INFECTION**, which *see*, and **CONTAGION**. Hence, pestilential distempers are those so communicated.

**PESTIS VACCINA**, a name given by Dr. DARWIN to a contagious disease to which cattle are liable. See the account of "Epidemic diseases," under the article **CATTLE**.

**PETECHIÆ**, the plural of **PETECHIA**; red or purple spots on the skin, which frequently appear in human diseases, as in the small-pox, &c. The Italians gave them this name from the word *petechia*, because they resemble the bites of fleas. The French call them *purpuratæ*; the Spaniards call them *taberdllo*; the Germans *lenticulares*.

**PETRÆ OLEUM**, vulgarly called *Oil of PETER*. See **PETROLEUM**.

**PETROLEUM**, or **OLEUM PETRÆ**, rock-oil, a fluid bitumen or mineral oil, exuding from the clefts of rocks, or from the earth, or found floating on the surface of waters, in different parts of Europe, and more plentifully in the warmer countries; similar, in its general properties, to the oils extracted by distillation from pit-coal, amber, and other solid bituminous bodies. The more fluid petrolea have been distinguished by the name of *Naphtha*, and the thicker, by those of *Pissasphaltum*, and *Pisseltum*. Their general virtues are those of stimulants, externally, in nervous complaints, and as diuretics. The college have retained the Bitumen Petroleum of Linnæus.

**PETROLEUM ALBUM**, white petroleum. It is nearly colourless, almost as fluid and limpid as water, of a strong penetrating smell, not disagreeable, somewhat resembling that of the rectified oil of amber.

**PETROLEUM BARBADENSE**, Barbadoes tar. It is of a reddish black colour, and a thick consistence, approaching to that of common tar. It is found in several of the American islands, but is chiefly obtained from Barbadoes.

**PETROLEUM FLAVUM**, Italian or yellow oil of petre. It is of a yellow colour, less fluid than the white sort, in smell less penetrating, less agreeable, and more nearly allied to that of the oil of amber.

**PETROLEUM VULGARE**, common rock-oil, or red petroleum. It is of a blackish red colour, of a thicker consistence, and a less penetrating and a more disagreeable smell than either the white or the yellow sorts.

**PHAGEDÆNA** (from *φαγω*, to *eat*), an equivocal term, sometimes taken in a latitudinous sense, for every ulcer which *eats away* the sound parts which are contiguous, and is called *ulcus depascens*. Sometimes it is used, more limitedly, for a deep tumid ulcer which destroys the flesh underneath, as well as the neighbouring parts. Sometimes it is described as only destroying the skin; and, at others, it signifies a particular species of ulcer, called *herpes phagedæna*.

**PHALANX** (*φαλαγγξ*), a term first applied to denote a rank of men in battalia, but now by anatomists used for the small bones of the human fingers. Those bones in the horse which are analogous to the phalanges may be seen in Plate XXIV. with the description of bones "in the upper limbs," under the article **OSTEOLOGY**.

**PHARMACY** (*pharmacia*), the art of preparing, preserving, and compounding, natural and artificial substances for medicinal purposes, in a manner suitable to their respective properties and the intentions of cure.

This art has been commonly divided into two branches, *galenical* and *chemical*: but no rational principle of distinction between them has as yet been fixed on. For Pharmacy, in its full extent, is no other than a branch of chemistry; and the most simple pharmaceutical preparations are so far chemical, as they have any dependence upon the properties or relations of the materials.

Pharmacy, according to our definition, may be divided into *theoretical* and *practical*. Theoretical pharmacy teaches the knowledge of the medicinal substances themselves, their various properties, qualities, and relations to one another, and their general effects on the human body. Practical pharmacy, the skilful performance of the several processes, or operations, by which they are adapted to particular uses.

The theory of pharmacy is the direct result of experiment and observation, or rather a general and comprehensive view of experiments and facts themselves; it may be termed *scientific pharmacy*, in distinction from mere manual labour.

Scientific pharmacy includes all those facts which relate to—the reduction of medicinal substances into different forms, and the forms in which particular substances are most commodi-

ously or advantageously used—their relations to one another in regard to miscibility, and the means by which those, that of themselves are not miscible, may be made to unite—the separation of the medicinal from the inactive matter, and of different kinds of medicinal matter from one another when combined together in the same subject, on the principle of one being dissoluble in liquors which will not dissolve the other, of one being exhalable by heat while the other remains fixed, &c.—the alterations which the medicinal parts themselves undergo, in different circumstances, and by different methods of treatment—the production of new properties and medicinal powers from the coalition of dissimilar things, with many other particulars analogous to these.

It is obvious, that a perfect acquaintance with pharmacy, considered in this light, is essentially necessary to the due exercise of the veterinary art. Without it, the prescriber must often err in the choice of materials for the different forms of preparation or composition, or in adapting a manner of preparation to given materials; and often be deceived also in the medicinal effects, which the known powers of the ingredients, separately, gave room to expect.

It would be inconsistent with the nature of the subject to wholly detach the scientific part of pharmacy from that which is more directly practical; for the science gradually results in the course of the practical details. A summary view of the general elements of the art, both practical and scientific, are requisite, that the practitioner may be the better prepared for the particular processes.

**PHARMACEUTICÆ** (φαρμακευτική), *medicine*, or the art of healing by means of drugs or medicines prepared by the art of Pharmacy.

**PHARMACOPŒIA** (from φαρμακον, a *medicine*, and ποιω, *to make*), a *dispensatory*, or compilation of medical formulæ approved of by practitioners. About the middle of the fifteenth century, Nicolaus Præpositus, of Tours, wrote a general dispensatory, and it was the first. The earliest that was sent forth by public authority, was that of Valerius Cordus, under the sanction of the senate of Norimberg, anno 1542. For a series of years, the publications called *Quincy's*, and *Lewis's*, Dispensatories have, been in use amongst the apothecaries. For veterinary practitioners, a suitable pharmacopœia is a great desideratum; but such a one can scarcely be formed, whilst our knowledge of the *effects* of medicines *on horses and other brute animals* is so limited; nor would it be possible to decide what substances should be retained in a work of

this sort. GIBSON, certainly the ablest man of his time, attempted this at a period when the necessary imperfections of such a work were very excusable, and under these circumstances, his "*Farrier's Dispensatory*" had great merit. But it is now nearly obsolete, in consequence of the great advances made both in the veterinary science and in the practice of human medicine since his time. What the subject will admit of, we have endeavoured to do in the course of this work, by transcribing the prescriptions of the most eminent veterinarians; occasionally availing ourselves, as must readily be perceived, of the assistance of the best dispensatories, where circumstances have rendered it advisable.

**PHARMACOPOLA**, or **PHARMACOPOLIST** (from φαρμακον, a *medicine*, and πωλεω, *to sell*), a seller or vender of medicine.

**PHARYNX** (απὸ τοῦ φερειν, because it conveys the food into the stomach). Thus the Greeks name what the Latins call *infundibulum*, also *pharyngethron*. It is a muscular passage or bag, fixed behind to the basis of the skull, laterally to the jaws, and below that to the larynx. See **ŒSOPHAGUS**. The muscles of this part are sufficiently described by their names: they are the *crico-pharyngeus*, from the cricoid cartilage to the pharynx; *thyro-pharyngeus*, from the thyroid cartilage to the pharynx; *hyo-pharyngeus*, from the os hyoides to the pharynx; *stylo-pharyngeus*, from the styloid process to the pharynx; *pterygo-pharyngeus*, from the pterygoid process to the pharynx; *mylo-pharyngeus*, from the dentes molares to the pharynx; *salpingo-pharyngeus*, from the Eustachian tube to the pharynx; *cephalo-pharyngeus*, from the basis of the skull to the pharynx; *syndesmo-pharyngeus*, from the white ligament to the pharynx; *chondro-pharyngeus*, from the cartilaginous appendage of the os hyoides; *glosso-pharyngeus*, from the root or upper part of the tongue laterally. Some have reckoned the muscles of the pharynx to be but two or three, whilst others have multiplied them to thirteen or fourteen on each side. In their various actions they enlarge and compress the gullet, so as to forward the aliment into the stomach. The space is all the vacuity behind the velum pendulum palati.

The pharynx is made up partly of several distinct fleshy portions, which are looked upon as so many distinct muscles, so disposed as to form a large cavity, and partly of a membrane which lines the inner surface of this whole cavity, and is a continuation of that of the nares and palate. This membrane is wholly glandular, and it is thicker on the superior and middle portions of the pharynx, and on the bottom, or



lower portion. Immediately above the first vertebræ, it forms several longitudinal rugæ, very thick, deep, and short; and we generally find therein a collection of mucus, in dead bodies. In the great cavity there are no rugæ, the membrane there adhering, as well as in the upper part, very closely to the muscles. At the lower part, where it is the thinnest, it covers the posterior part of the larynx, and is very loose, and formed into irregular folds.

**PELLANDRIUM** (from *φελλος*, the cork; so called because it floats upon water like cork); the *Pellandrium aquaticum* Linn. or *water hemlock*. Withering says, the seeds are recommended in intermittent fevers; the leaves are sometimes added to discutient cataplasms: the plant is generally esteemed a fatal poison to horses, occasioning them to become paralytic: but this effect is attributed to an insect (*curculio parapieticus*) which generally inhabits within the stems: a vulgar antidote is pig's-dung.

**PHIAL**, the name of a glass vessel, with a big belly and long neck, often used for chemical processes. The common *phial* of the apothecaries, however, is usually denoted by this term.

**PHILONIUM**; an opiate so called from its inventor, Philo. Galen says, that the antidote of Philo is one of the oldest of its kind, but the mithridate is much older. The *philonium Romanum* is originally a prescription of N. Myrepsus. There are different prescriptions for this compound in different pharmacopœias: in that of London, 1788, it is made in the following manner, and it is now called *confectio opiata*:

*Opiated Confection.*

Take of hard purified opium, powdered, six drachms;  
Long pepper,  
Ginger,  
Caraway seeds, of each two ounces;  
Syrup of white poppy, boiled to the consistence of honey, three times the weight of the whole.

Mix the purified opium carefully with the heated syrup; then add the rest, previously rubbed to powder.

**PHIMOSIS** (from *φίμω*, to bend up). It is when the prepuce cannot be drawn over the glans penis, so as to uncover it.

**PHLEBORRHAGIA** (from *φλέψ*, a vein, and *ῥήγνυμι*, to break); a rupture of a ve

**PHLEBOTOMY** (*phlebotomia*, from *φλέψ*, a

vein, and *τεμνω*, to cut); the same as *venæsection*, the cutting or opening a vein. See BLEEDING. Until the circulation of the blood was demonstrated, the principles for this practice did not seem so clear as they are at present; and even now there is some diversity of opinion respecting bleeding in particular cases. The taking away blood is only proper when there is too much crassamentum in the vessels, or when it is to avoid a worse inconvenience than that of lessening the already too little quantity of blood. In general, the pulse is the best guide (see PULSE), both as to when to bleed, and the quantity to be taken away. When the pulse is full, strong, or tense, bleeding will always be proper, provided that a plethora be the cause, and not rarefaction; indeed, in old animals, the pulse seems hard from the rigidity of the coats of the arteries. In apoplexies from a sanguine plethora, bleeding is the principal means of relief. When bleeding is and is not convenient would require a particular treatise to relate; but its proper use, or ill effects, are generally noted in these sheets, in treating of each disease respectively. However, it may here be necessary to make one observation, that though bleeding is one of the most valuable of medical remedies, in judicious hands, it often is converted to the most dangerous purposes, when ignorantly or rashly practised. Therefore great circumspection, in many respects, is necessary in the use of this remedy. Where the habit is strong, the pulse full, hard, and quick, it is generally right to take away blood in any disease with which the constitution may be oppressed. Where the habit is weak, and the contrary extremes take place with regard to the pulse, it is almost always wrong. And with respect to the quantity of blood to be taken away, as well as the mode by which the operation is to be performed, in order to relieve some oppressive symptoms which affect the head, lungs, or other of the interior parts, we must be regulated by the nature of the animal's constitution, and consider to which of these circumstances it has the greatest tendency. Some important circumstances attending the use of phlebotomy in horses are noted under the article BLEEDING, already referred to. We shall here therefore only particularize the parts of a horse's body proper to bleed in:

1. It is usual to bleed horses in the jugular veins, which lie on each side of the neck, for the farcy, mange, repletion, and several other distempers; and also by way of repletion, twice a-year, to all horses that feed well and labour but little.

2. Blood is usually taken from the temples, with a small lancet, for bites or blows on the eyes.

3. Farriers have a lancet made on purpose for opening of veins beneath the tongue, for head-aches, or when a horse has been overheated by excessive labour, or for colics, and the likes.

4. It is usual to bleed horses in the membrane of the nose, without any regard whether they hit the vein or not; and this is also done for colics, vives, and being over-heated.

5. Horses are let blood in the middle of the palate, above the fourth bar, with a lancet or sharp horn, when they have been harassed, or over-heated, and seem dull.

6. Blood is taken from the basilic, or thigh-veins of horses, for strains in the shoulders, or the mange in those parts.

7. Horses are bled in the pasterns, with a fleam or a lancet, for strains or infirmities in the hams or knees.

8. They are let blood in the toes, with a but-trice, or drawing-iron, for bruises in the feet, and infirmities in the legs, such as swellings and affections of the nerves.

9. The flank veins are sometimes opened, with a small lancet made for that purpose, for the farcy.

10. Blood is drawn with fleams in the flat of the thighs, for blows and strains in the haunches.

11. They bleed in the tail or dock, with a long lancet, for a fever and shortness of breath.

PHLEGM (φλεγμα); the same as ΠΙΤΤΑ, which see.

PHLEGMASIA (φλεγμασία); an inflammation. Phlegmasiæ, in Cullen's Nosology, is an order in the class *Pyrexia*.

PHLEGMON (from φλεγω, to burn). See INFLAMMATION. In Cullen's Nosology, it is a species of Phlogosis, which he defines to be of a lively red colour; generally a circumscribed tumor elevated to a point, often attended with a throbbing pain, and then terminating in an abscess.

PHLEPS (φλεψ), a vein. Among the ancients, it was both an artery and a vein.

PHLEUM, cat's-tail-grass, a genus in Linnæus's botany. He enumerates five species.

PHLOGISTON (from φλογίζω, inflammo), a term much used by chemists of the old school to signify fire contained in bodies as a constituent principle. They also called it the *inflammable matter*, and *sulphureous principle*. By their account, it differs from elementary fire in the following particulars: 1st. When united with a

body, it communicates to it neither heat nor light. 2. It produces no change in its state, whether of solidity or fluidity; so that a solid body will not become fluid by the accession of the phlogiston, and *vice versa*; the solid bodies with which it is joined being only rendered thereby more apt to be fused by the force of the culinary fire. 3. We can convey it from the body with which it is joined, into another body, so that it shall enter the composition thereof, and remain fixed in it. Hitherto chemists have never been able to obtain the phlogiston quite pure and free from every other substance; for there are but two ways of separating it from a body of which it makes a part; to wit, either by applying some body with which it may unite the moment it quits the former; or else by calcining and burning the compound from which you desire to sever it. In the former case, it only passes from one combination into another: and in the latter, it is entirely dissipated. The inflammability of a body is an infallible sign that it contains phlogiston; but from a body's not being inflammable, it cannot be inferred that it contains none; for experiments have demonstrated that certain metals abound with it which yet are by no means inflammable. When animal or vegetable matters are burnt in such a manner as to hinder them from flaming, some part of the phlogiston contained in them unites intimately with their most fixed earthy parts, and with them forms a compound that can be consumed only by making it red-hot in the open air, where it sparkles and wastes away, without emitting any flame. This compound is called *carbon* or *charcoal*, and readily communicates to other bodies the phlogiston it contains.

The late Dr. Priestley remained to the last a defender of the phlogistic theory, which has been abandoned by every other philosopher, in favour of the doctrines of Lavoisier and the French chemists, whose theories, however, are grounded on the discoveries of our countryman Hooke.

PHLOGOSIS (φλογωσις), from φλογω, to inflame), a flushing, or heat in any part, with or without tumour. In Cullen's Nosology, it is a genus of disease in the class *pyrexia*, and order *phlegmasiæ*. He defines it to be a febrile disorder, in which there is a redness of an external part, with heat, and tense pain. The species are *phlogosis erythema*, and *phlogosis phlegmone*.

PHLYCTÆNÆ (φλυκταίναι), small bladdery pustules, rising upon the scarf skin, after the manner of those caused by scalding hot water, from which the name. Linnæus and Vogel use this term as synonymous with *hydatis*.



PHOS, *φως*, light; also the black circle about the pupil of the eye.

PHOSPHATES, are salts formed by the union of the *phosphoric* acid (see ACIDS), with the different alkaline, earthy, and metallic, bases; there are twenty-six species enumerated in M. Fourcroy's Elem. of Nat. Hist. and Chem.

PHOSPHITES, salts which are formed by the union of the *phosphorous* acid with the different alkaline, earthy, and metallic, bases; there are twenty-four species enumerated by Fourcroy.

PHOSPHORUS (*φωσφορος*, from *φως*, light, and *φερω*, to bring); a chemical preparation, from urine chiefly, that will flame and burn spontaneously. There are several kinds of it not necessary to be enumerated here.

PHOSPHURES, are combinations of non-oxygenated phosphorus with different bases; there are two species enumerated in M. Fourcroy's Elements.

PHRENES (*φρενες*), the same as *Diaphragm*, which see, and thus called, from *φην*, mens, the mind, because that was formerly imagined by some to be its seat.

PHRENIC, a name by which the arteries and veins of the diaphragm are called.

PHRENITIS (*φρενιτις*), a *phrenzy* or irritation, whose seat is certainly in the head, though it has its name from a supposition that it is seated in the diaphragm. See BRAIN, MADNESS, &c.

PHTHIRIASIS (*φθειριασις*, the lousy evil, from *φθειρ*, a louse.) It is when lice are produced all over the body of an animal.

PHTHISIS (*φθισις*, from *φθιω*, corrupto, to rot, or waste), a consumption. See CONSUMPTION. Dr. Cullen does not consider phtisis as an original disease, but as a mode of some other disease, being terminated.

PHYMATA (from *φύωμαι*, to grow, or to be generated from, or from *φύω*, to produce); a name given to all kinds of præternatural tumours from any part of the body, and especially such as affect the superficies of the skin, and arise without any external cause, and are generated, increased, inflamed, and suppurated in a short time.

PHYSCONIA (from *φυσκν*, an inflated bladder), a *physcony*. It is a hardish tumor, occupying a large portion of the abdominal cavities: it increases very gradually, is not sonorous, nor is there any fluctuation observed in it. Dr. Aitken defines it to be a scirrhus of one or more of the abdominal organs.

PHYSIC, or PHYSICK, in the common acceptance of the term, denotes medicine, or the

art of medicine. Thus we speak of the practice of physic in the latter sense, and of the administration of physic in the former; whilst a man or horse said to have *taken physic*, is supposed to be under the operation of a *purge*. Physicing horses, whether sick or well, is a common stable practice; how far properly so is shewn under the articles PURGING and PHYSICING. The practice of *physic* has naturally given the qualified practitioners of the art the appellation of *physicians*.

PHYSICS (*φυσικη*, from *φυσις*, *natura*), in general, the science of all material beings, or whatsoever concerns the system of this visible world.

PHYSIC NUT. Two species of *jatropha* are so called; one of them is the cotton-leaved species.

PHYSICING, the practice of administering purging medicines to horses, on a supposition that they tend to preserve health, and contribute to activity.

"An indiscriminate use of purgatives," Mr. DENNY very properly observes, "is so prejudicial in veterinary practice, that more valuable horses have been lost by improper courses of them than from any accidental cause.

"It is surprising that this erroneous notion that horses frequently require to be purged should prevail, and that this important undertaking should so generally be left to the direction of a groom. Reasoning from analogy, would a man, whose strength was daily declining from some defect in the digestive organs, submit to the experiment of taking two or three doses of drastic purgatives, to recover the tone of his stomach, and repair his strength? Certainly not! For every man must know so well the debilitating effect of purging, as to be certain that such a course would tend only to diminish still more his remaining strength.

"This evinces the absurdity of that common practice of giving horses physic in every disease. Discrimination and judgment can alone determine when purgatives are requisite, and when, on the contrary, they are injurious."

Mr. Denny takes a view of the prescriptions recommended by veterinary writers, as well as of some preparations commonly employed by grooms. "So great," he says, "is the prejudice against new forms, that men of the most cultivated minds will frequently rather hazard the lives of their horses, through the ignorance of a groom, than discard from the purging remedy employed, any article that is not merely inert, but even pernicious.

"It is commonly known," says he, "that,

besides aloes and calomel, employed as purgatives, there are many others, as jalap, rhubarb, salts, and syrups of various kinds, in daily use, from the supposition that the efficacy of the medicine must be increased by the number of ingredients.

"Such is the prepossession in favour of these useless medicines, that I have known men of abilities discountenance a simple but efficacious dose of physic, only because it was not prepared with syrup of buckthorn; which though obtained genuine, as is hardly to be expected from any druggist, yet it can, in reality, only answer the purpose of so much treacle. The safest and only certain purgative is aloes. In particular cases calomel is also necessary. But very large doses of other medicines employed for the human subject have no effect upon the horse, as experience sufficiently confirms. This may easily be conceived by those who are acquainted with the structure of the horse's stomach, which differs essentially from that of the human, exclusive of the difference in length of the intestinal canal. Unless therefore the stimulating quality of the medicine remain long after it has passed from the stomach, it will have no effect on the bowels; a circumstance which accounts for the failure above mentioned. The horse, in a state of health, requires a constant supply of food, to repair the waste of the body. As this aliment occupies a large space, the natural motion of the intestines is slow, so as not to expel their contents before the nutritious part is completely absorbed. Again, the quantity of matter remaining in the small intestines requires the constant stimulus of the bile, to propel it into the large ones. A constant supply of bile being therefore required, the horse does not stand in need of a reservoir for that fluid, and therefore is not provided with a gall-bladder; the bile, as it is secreted by the liver, flowing from its duct into the intestines.

"Considering therefore the length of the intestines, and the slowness of their motion in the horse, it is natural to suppose that a powerful dose of physic will so increase this action, and forcibly propel their contents, as to produce in some part of the intestines violent pain and spasms, succeeded by inflammation, which frequently terminates in the death of the animal; too many instances of which preclude the possibility of its being doubted.

"In all cases, therefore, where the strength of the animal is not exactly ascertained, a small dose should be first given, which may be afterwards increased, if found necessary: thus every advantage will be secured, without hazard;

for horses of the same breed, and size, differing as much in constitution as the human subject, the same dose, at different times, will produce very different effects."

Mr. Denny next, in a very adequate manner, points out the cases in which purging physic may be used with advantage.

"Horses coming from camp," says he, "into warm stables, should have one or two doses of mild physic administered.

"Many of those inconveniences that arise from a sudden change of temperature, as swelled legs, inflamed eyes, colds, &c. would also be prevented, by having the doors and windows kept open, to admit a free passage of air during the few first days. It is likewise advantageous to give each horse a cold mash or two daily, and afterwards close the doors and windows gradually, to prevent any bad consequences from the transition which might otherwise be hurtful.

"Young horses should always have two or three doses of physic; and afterwards sufficient time allowed them to get into condition before they are sent to the riding-school. The service loses annually many valuable horses, by their being too hastily formed for the ranks; which generally produces inflammation of the lungs.

"Horses require physic after having been long fed on green food; and also in the autumn, before preparing them for the field. Those also that have swelled and cracked heels, from their high feeding, or irregular exercise, will be much benefited by purging physic."

Under the article BALL, and in various other parts of this work, we have inserted approved formulæ composed of cathartic ingredients. We cannot however omit the following, which Mr. Denny has found extremely useful as physic for horses.

#### *Purging Balls.*

##### No. 1.

Take of Barbadoes aloes, in fine powder, four drachms;

Ginger, in fine powder, one drachm;  
Treacle, enough to form the ball.

This is particularly suited to blood horses.

##### No. 2.

Take of Aloes, in fine powder, six drachms;  
Ginger, in fine powder, one drachm  
and a half;

Treacle, enough to form the ball.

This is better adapted for horses used in hunting, or on the road.



## No. 3.

Take of Aloes, in fine powder, one ounce;  
 Ginger, in fine powder, two drachms;  
 Treacle, enough to form the ball.  
 This is suitable for labouring horses.

The author observes, that if these doses should not be found sufficiently strong, a drachm or two of aloes may be added to any of them. In those cases where mercurial physic is deemed necessary, it is a commendable practice to give a calomel ball in the evening, and the aloëtic purge, No. 1, the next morning.

The following are Mr. Denny's

*Mercurial Balls.*

## No. 1.

Take of Calomel, one drachm;  
 Aniseeds, in powder, half an ounce;  
 Treacle, enough to form the ball.

## No. 2.

Take of Calomel, one drachm and a half;  
 Aniseeds, in powder, half an ounce;  
 Treacle, enough to form the ball.

## No. 3.

Take of Calomel, two drachms;  
 Aniseeds, in powder, half an ounce;  
 Treacle, enough to form the ball.

He advises the second aloëtic ball to follow the mercurial ball, No. 3, as these will be found sufficient.

The treatment of horses during a course of physic should be as follows:

"Mashes of scalded bran, with a handful of corn in each, should be given for one or two days previous to taking the ball, which is to be given early in the morning.

"Two or three quarts of warm water only to be allowed for the first four hours. Afterwards give a warm mash, which is to be repeated two or three times during the day. The water given should be warm, but not in larger quantities than usual. A small allowance of hay is proper at night. If mashes and water be refused, as is often the case, gruel must be given instead of them.

"Next morning the horse should be walked out, for half an hour, or longer, if necessary; at which time the physic generally operates. He may be exercised again in the middle of the day.

"Mashes and warm water are to be continued until the evening. His feed may then

consist of equal parts of dry bran and oats; and the following day his food be as usual.

"Horses under physic require additional covering; they being then more susceptible of cold than at any other time.

"The practice of trotting horses violently, to assist the operation, is both absurd and dangerous. Almost every instance of physic failing to produce its proper effect is in consequence of mismanagement or neglect in the stable.

"An interval of eight or nine days must be allowed before the second dose is given, during which period he should have one or two hours walking exercise daily, taking care that he be well groomed on his return to the stable, and regularly fed."

Further observations on this subject occur under the articles PURGING, CATHARTICS, &c.

PHYSIOLOGY, the first branch of theoretical medicine, which is divided into three general heads. Thus Physiology treats of that condition of the body which is necessary to life and health. The second, called *pathology*, delivers the general doctrine of diseases; and the third, called *therapeutics*, delivers the general doctrine concerning the means of prevention and cure.

As our superior knowledge of the structure and functions of the human body necessarily renders it the standard of comparison, and the ground of analogy, in all veterinary enquiries, we must, till further advances are made in the latter, content ourselves with such information as we can procure from the most respectable medical authorities, leaving it to the reader to exercise his judgment in applying what is so selected to the particular cases of brute animals which fall within the sphere of his observation.

In treating of physiology, Dr. Cullen first considers the solid matter of which our bodies are composed, and which he calls the *simple solid*. Here he differs remarkably from Boerhaave; for the latter, following the doctrine of the chemists, asserted, that the original stamina of the human body are fibres composed of earthy particles cemented together by a kind of glutinous matter. This cementation is denied by Dr. Cullen, who very justly observes, that nothing can be deduced from the chemical analysis of these solids, unless we were able to recombine them from the principles to which they are reduced by chemical operations.—All that we can know, therefore, with regard to our solid parts, is, that they are formed of water, and a certain matter concreting along with it. The brain is that part of the human body which is first formed; and therefore, he is of

opinion, that it is the principal or chief organ, upon which the welfare of the body depends. The original stamina of the body he also supposes to be fibrous; and differs from other physiologists, who suppose it totally to consist of cellular texture. This last, he thinks, is superadded to the fibres. How the nutritious matter is applied to the fibres, in order to extend them in length, or to form a cellular texture on their surface, he declares himself unable to explain. "It is probable, however," says he, "that for a certain time, at its first beginning, the growth of animal bodies proceeds in the same manner as that of vegetables: but it is evident, that, at a certain period, in the growth of animals, a different œconomy takes place; and that afterwards the growth seems to depend on an extension of the arteries in length and wideness by the blood propelled into them. It may be supposed that this extension of the arteries is applied to every fibre of the body; and that, by the extension of these, it gives an opportunity for the application and accretion of the nutritious matter, to the growth therefore of the fibre itself, and to the growth of cellular texture on its surface. Perhaps the same extension of the arterial system gives occasion to the secretion of fluids, which, poured into the cellular texture already formed, according to the disposition of these fluids to concrete more or less firmly, gives the different degrees of hardness or density to be observed throughout the body.

"By this extension of the arterial system, the several parts of the body are gradually evolved, some of them sooner, others later, as by the constitution of the original stamina, or after occurrences, they are severally put into such conditions as render them less exposed to the impetus of the blood, and fitted to receive a greater quantity of it. But as the parts by these causes first evolved will increase the most in the density of their solid parts, they will therefore more and more resist their former growth; and by the same resistance will determine the blood with more force and in greater quantity into the parts then not so far evolved. Hence the whole system will be at length evolved; and every part of the solids will, in respect of density and resistance, be in balance with every other part, and with the forces to which they are severally exposed.

"The extension of the arteries depends upon the resistances which occur to the free transmission of the blood through them; and further, from a resistance in the veins. For as a considerable portion of the blood does not commonly pass into the smaller branches of the arteries,

but must pass very entirely into the veins; so these, by their capacity constantly diminishing as they approach nearer to the heart, and by their coats being of a density and firmness sufficient to prevent further dilatation, considerably resist the free passage of the blood from the arteries into them.

"While these resistances continue, the arteries, and with them almost every fibre of the body, must be extended at every systole of the heart, and with this extension the growth of every part will proceed; but as every part, by its receiving an addition of solid matter, becomes more dense and rigid; so it is less easily extended, and perhaps less readily receives an accretion of new matter than before. Hence it is, that the more the body grows, it admits of any additional growth the more slowly; and unless the extending powers increase in the same proportion with the increasing density of the solids, there must be a period at which these two powers will balance each other, and the growth will proceed no farther. But as it is evident, that the bulk and weight of the heart, and probably therefore its force, does not increase with the increasing bulk of the body, and that the action of the heart is the principal extending power in the system; it is also plain, that the extending power does not extend in the same proportion with the increasing density of the solids; and therefore that these two powers will, at a certain period, come to balance each other.

"But not only is the force of the heart thus constantly diminishing with respect to the resistance of the arteries, but, though this force were still subsisting, it has, from other causes, less effect in extending the arteries. The blood is more confined in the arteries, and extends them further in proportion to the resistance of the veins; and this resistance in the veins, and extension of the arteries depending upon it, will be more or less according to the respective density of these two sets of vessels. But it appears from the experiments of Sir Clifton Winttingham, that the density and firmness of the veins with respect to their corresponding arteries is much greater in young animals than in old ones; and thence it appears, that, during the growth of animals, the arteries are acquiring an increase of density in a greater proportion than the veins are at the same time; and therefore, that the resistance in the veins with respect to the arteries must be constantly diminishing; that the veins will therefore receive a greater proportion of blood; that in the same proportion the arteries will be less extended; and lastly, that the



diminished resistance in the veins concurring with the diminished force of the heart, will the sooner bring the increasing rigidity of the arteries, and therefore of every fibre in the body, to be in balance with the extending powers; at least so far as to prevent their producing any farther growth.

"This account of the change of the resistance in the arteries and veins, with respect to one another, is agreeable to phenomena, which shew that the arteries are larger, and contain more blood in proportion to the veins, in young animals than in old; that arterial hæmorrhages occur most frequently in young persons; and that congestions in the veins with hæmorrhages, or hydropic effusions depending upon them, occur most frequently in old age.

"It is probable, that the resistance both of arteries and veins goes on increasing, while the force of the heart is not increased at the same time; but it appears also, that from the diminishing force of the heart, and the compression which the smaller vessels are exposed to from the distension of the larger, the action of the muscles, and other causes; the number of small vessels, and therefore the capacity of the whole system, is constantly diminishing so much, that the heart may still for some time be sufficient for the circulation of the blood. But while the resistances in the vessels are constantly increasing, the irritability of the moving fibres and the energy of the brain are at the same time constantly diminishing; and therefore the power of the heart must at length become unequal to its task, the circulation must cease, and death ensue.

"The unavoidable death of old persons is thus in part accounted for; but it is, however, still probable, that the same event proceeds chiefly from the decay and total extinction of the excitement or vital power of the nervous system, and that from causes very much independent of the circulation of the blood, and arising in the nervous system itself, in consequence of the progress of life. This seems to be proved by the decay of sense, memory, intellect, and irritability, which constantly takes place as life advances beyond a certain period."

Thus, the nervous system is represented as the substratum or fundamental stamina of the whole body; and indeed, as the author explains it, our whole frame is so made up of nerves, that the body may be said to contain nothing else. The nervous system he divides into four parts. 1. The medullary substance contained in the cranium and vertebral cavity; the whole of which seems to consist of distinct fibres, but without the several fibres being separated from

each other by any evident developing membranes. 2. Connected with one part or other of the above substance are the nerves, in which the same medullary substance is continued; but here more evidently divided into fibres, each of which is separated from the others by an enveloping membrane derived from the pia mater. 3. Parts of the extremities of certain nerves in which the medullary substance is divested of the enveloping membranes from the pia mater, and so situated, as to be exposed to the action of certain external bodies, and perhaps so framed, as to be affected by the action of certain bodies only. These he calls the *sentient extremities* of the nerves. 4. Certain extremities of the nerves so framed as to be capable of a peculiar contractility, and in consequence of their situation and attachments to be by their contraction capable of moving most of the solid and fluid parts of the body. These he calls the *moving extremities of the nerves*; they are commonly called *moving* or *muscular fibres*. The proof of this last position we shall give in his own words.

"The inherent power (or contractility of the muscles) is supposed to be more vigorous, moveable, and permanent, in certain muscular fibres than in others.

"The inherent power, or the contraction dependent upon it, can be excited by certain applications, made either to the muscles themselves, or to the nerves connected with them; and in either case, the effects of such application are so exactly the same as to allow us to conclude that the matter of the nerves and of the muscular fibres is of the same kind.

"The muscular fibres are sensible to various impressions, and are otherwise organs of the sensations of consciousness. From this also it is presumed, that the muscular fibres consist of the same matter which is the subject of sense in other parts of the nervous system.

"From the two last and other considerations, we think it probable, that the muscular fibres are continuations of the medullary substance of the brain and nerves as before alleged.

"Though the muscular fibres consist of the same kind of matter as that in the nerves, the latter shew no contractility, because they have not the peculiar organization of the former."

Some physiologists, particularly Haller, have endeavoured to prove, that the muscles have a power of motion independent of that which they receive from the nerves; these our author refutes by some experiments which prove, that both of them continue for an equal length of time, and that when the nerve is irritated, the muscle contracts, even after death, in the same

manner as though the muscular fibres themselves were irritated.

The doctor next endeavours to shew, that the force of cohesion and of the muscular fibres are the same. His words are, "As the force of cohesion in the muscular fibres of living animals is much greater than in those of dead ones, it is probable from this and other considerations that the cause of muscular contraction is an increase only of that same power which gives the contractility of the simple solids, and of other inanimate elastics. See *Haller, Prim. Lin.* 407, 408.

"If this is true, it will also explain why the force of cohesion in muscular fibres is greater than that of the medullary fibres in any other part of the nervous system, though both kinds of fibres consist of the same kind of matter." The power above mentioned he conjectures to be an elastic fluid, the motions of which are excited in the nerves, and by their means accumulated in the muscles. The excitement of the fluid in some measure is what is properly called *life*, at least as far as that is corporeal; and its collapse, or some diminution of its motion, produces sleep, fainting, &c. or if the collapse is total and irrecoverable, death itself.

With regard to this nervous power, the Doctor absolutely denies that it is secreted from the blood. "The most common opinion," says he, "is, that the brain is a secretory organ, which secretes a fluid necessary to the functions of the nervous system; that this fluid is alternately exhausted and recruited, and thereby gives occasion to the alternate states of sleeping and waking. But this supposition is attended with many difficulties. 1. It is probable that the nervous fluid existed in the animal embryo before the action of the heart, or any secretory function, could take place. 2. In animals which during the winter suffer a temporary death, when, by heat, they are again restored to life, the vital power of the solids is restored before the fluidity of the blood. 3. The nervous fluid subsists in the nerves and muscular fibres long after they are separated from the brain, and often when cut into small parts. 4. Though it be true that the brain is a secretory organ, the fluid may be destined to another purpose; and, so far as we understand that purpose, the fluid fit for it must be unfit for the purposes of sense and motion. 5. There is no appearance, in any part of the nervous system, of provision made for an occasional accumulation of the secreted fluid; nor is there any evidence of its actually taking place. 6. The phenomena of sleep and waking do not correspond with such a supposi-

tion; as sleep often takes place when the secreted fluid must be copiously present, and waking can be protracted when the fluid is exhausted much beyond its usual measure. 7. Both states are induced by many causes which can hardly be supposed to act upon a secretion.

"A certain compression of the brain can produce a state of the system resembling sleep: but that state is in some respects different from that of ordinary sleep; and it does not by any means appear, that natural and ordinary sleep depends upon any compression of the brain.

"As it is therefore probable, that sleep and waking do not depend upon a different quantity of the matter of the nervous fluid for the time present in the system, or upon any causes interrupting its motion, while the condition of the matter remains the same, we are disposed to believe, that those states of sleep and waking depend upon the nature of the nervous fluid itself, capable of becoming more or less moveable; that it is chiefly in the brain susceptible of these different conditions; and that especially by its condition there, it has its more general effects on the system."

Speaking afterwards of the nutrition of the body, he says, "From the fibrous parts being evidently, in most instances, parts of the nervous system, and from the gradual formation of the foetus, in which the nervous system is first formed, we think it probable, that the whole of the fibres in the different parts of the body are a continuation of the nerves; and this again will lead to the conclusion, that the nourishment of the soft and homogeneous solids every where is conveyed to it by the nerves.

"This supposes also what is otherwise probable, that the cortical part of the brain, or common origin of the nerves, is a secretory organ, in which the gluten of the blood being freed from all saline matter before adhering to it, becomes fit for the nourishment of the solids, and being poured in a sufficiently diluted state upon the organ of the nerves, it is filtrated along the fibres of these; and is thus conveyed to every stamina fibre of the system. We suppose, at the same time, that the medullary, or what may be called the *solid matter of the nerves*, is, in the living body, constantly accompanied with a subtile elastic fluid, which fits them for being the organs of sense and motion, and which probably is also the means by which the nutritious fluid is carried on in the substance of the nerves from their origin to their extremities.

By this system the blood and its circulation, instead of being the principal or vital function,



as it was reckoned by Hervey and others, becomes so much a secondary in the animal economy, that it answers little other purpose besides the nutrition of the body. It has been objected, however, that this fluid is, somehow or other, of the utmost consequence; since a stoppage of the circulation, or a wound in the large vessels about the heart, proves instant death without waiting for any consumption of the body by reason of its want of nourishment. This our author explains by reminding us, that the vessels must necessarily be in a certain state of distension, in order to the mobility of the nervous fluid. The evacuation of all the blood causes an irretrievable collapse of the vessels, and consequently of the nervous fluid; upon which death immediately takes place.

It would be superfluous here to enter into any particular disquisition concerning the manner in which each of the functions of the animal economy are performed. These may be seen under their proper articles as they occur.

PHYSOCELE, a windy tumour (from *φυσα*, a *flatus*, and *κηλη*, a *tumour*), a wind-rupture, or windy-tumour.

PHYTOLACCA AMERICANA (from *φυτον*, a *plant*, and *λακκα*, *gum lac*; so called because it is the colour of lacca); *pork-physic*, *pork-weed*, *red-nightshade*. It is found every where in North America, from Virginia to New York. It is a large plant, with a strong stem sending forth many branches. The leaves are large, smooth, juicy, oval, and entire, without indentations on the edge, and placed alternately. The root is large and perennial, runs deep into the ground, and divides into many branches. It is raised in our gardens. The leaves are anodyne. The juice of the whole plant is sharp and corrosive: it is not used inwardly; but inspissated to the consistence of an ointment, by setting it in the sun, it is applied to cancers and to ulcers for removing their callosity. The corrosive part is so volatile, that, if the juice is quite dry, it is inactive and useless. If the roots are roasted and beaten into a poultice, then applied to ulcers with hard tumours and callosities, it dissolves them.

PHYTOLOGY (*φυτολογια*, from *φυτη*, *planta*, an *herb*, and *λεγω*, *narro*, to *describe*), a description of plants.

PIA MATER, a thin and delicate double membrane which lies under the dura mater, and covers immediately the substance of the brain. Its inner membrane is much larger than its outer membrane; for it runs in betwixt all the foldings and circumvolutions of the brain to separate them, and to sustain the blood-vessels,

which make several turnings and windings upon it, before they terminate in the substance of the brain. It has the same use as the dura mater. See BRAIN.

PIAFFEUR, in the manege, a kind of movement in a proud and stately horse, that, being full of mettle, wishes to go forward; this excessive eagerness makes his motion the greater as you endeavour to keep him in, and bends his leg up to his belly: he snorts, traverses if he can, and by his fiery action shews his restlessness, whence some, though very improperly, say, he dances. Such horses as these, or such as are bred to passage upon a straight line, are much admired in processions and magnificent festivals.

PICA, the same as MALACIA, which is a vitiated appetite, wherein there is a craving for things unfit for food.

PICKER, or HORSE-PICKER, an iron instrument five or six inches long, bent or crooked on one side, and flat and pointed on the other, used by grooms to cleanse the inside of the horse's feet, and pick out the earth and sand that has got in between the shoe.

PICTONUM COLICA, a variety of the colica spasmodica of Cullen. It is occasioned by lead, or the fumes of lead, taken into the system, by accidental means, as from the vapour or handling of white-lead paint. Horses and other cattle are liable to it.

PIG-NUT. See BUNUM and BULBOCASTANUM.

PILES; the same as the HÆMORRHOIDES. See the latter.

PILL (*pilula*, from *pila*, a *ball*); a form well adapted for those medicines that operate in small doses, and that are offensive in taking, or so heavy that they are not easily suspended in, or mixed mechanically with, any fluid. They dissolve the most difficultly, and produce the most gradual and lasting effects of any other form; this, in some cases, is a disadvantage, in others an advantage. Pills for horses are called BALLS. See that article.

PILLAR. Most of the great riding-schools have pillars fixed in the middle of the manege-ground, to point out the center; but all maneges in general have, upon the side or circumference, other pillars placed, two and two, at certain distances, from whence these are called the two pillars, to distinguish them from that of the center.

When they speak of the former, they call it *working round the pillar*; and when they refer to the other two, they call it, *working between the two pillars*. The pillar of the center serves to

regulate and adjust the extent of ground, to the end that the manege upon volts may be performed with method and justness, and that they may work in a square by rule and measure, upon four lines of the volt, which ought to be imagined at an equal distance from the center. It serves likewise to break unruly high-mettled horses, without endangering the rider, the horse being tied to a long rope, one end of which is made fast to a pillar, and managed by a man placed by the pillar, which keeps the horse in subjection, and hinders him from flying out.

**PILULARIA**, *pepper-grass*, a genus in Linnæus's botany, in the order of *Filices*, or *ferns*. He enumerates but one species.

**PIMENTO**, *all-spice*, or *Jamaica pepper*. The tree that affords it is the *myrtus pimenta*, Linn. The college have retained the pimento, and have directed a simple and a spirituous water to be distilled from it; the former is called *aqua pimento*, and the latter *spiritus pimento*. It is also an ingredient in the *syrupus spinæ cervinæ*.

**PIN AND WEB**, a vulgar name given to a horny induration of the membrana nictitans of the eye in horses.

**PINEAL GLAND**. See **BRAIN**.

**PINCHING**, in jockeyship, a term used to express a method of trying a horse's mettle, or vigour, and of shewing him off to a purchaser when the creature is on sale. Thus, when the rider is on his back, he makes him stand still, and keeping him fast with the bridle-hand, he applies the spurs to the hair of the sides. If the horse is impatient under this, and draws himself up, and wants to go forward, it is a sign of mettle. But the purchaser ought to try this himself on the horse's back; for the jockeys have the art of making the dullest horse seem to have mettle in these trials. The purchaser must also distinguish between the restlessness of the horse under this treatment that arises from vigour, and that which arises from the horse's being ticklish, and which goes off immediately. See the article **BUYING**.

**PINGUEDINOSA MEMBRANA**, the cellular membrane, where the oily matter contained in it almost dissolves spontaneously.

**PINGUEDO**, or **PINGUIS**, *fat*; which see.

**PINNA** (*πinna*, a wing). The lateral and inferior parts of the nose are called *pinnae* and *nasi alæ*; and the superior broad parts of the ears in the human subject are also called *pinnae*. Some muscles are called *pinnated*.

**PIPER** (from *πεπρω*, to concoct; because by its stimulus it assists digestion); *arum meschatum*.

It is the small round aromatic fruit of a trailing plant, which grows in Sumatra, Java, and Malabar. There is a variety of substances of this name, which are distinguished by particular epithets annexed to the term; viz. *white*, *black*, *long*, *Jamaica*, and *Indian*.

**PIPER**, pepper, a genus in Linnæus's botany. He enumerates twenty-five species. Thus *piper indicum*, is the *capsicum annuum* Linn. The *capsicum*, or Guinea pepper, has been introduced into the new college pharmacopœia.

**PIPER NIGRUM**. It is the *piper nigrum* Linn. This is retained in the college pharmacopœia. What is called *white pepper* is the *piper nigrum* after it has been decorticated.

**PIPER JAMAICENSE**, i. e. **PIMENTO**.

**PIPER LONGUM**. It is the *piper longum* Linn. This is retained in the college pharmacopœia.

**PIPER CAUDATUM**, the *cubeb*.

**PIPERITIS**, dittander.

**PIPERINE**. Things are thus called which partake of the chief qualities of pepper, whether simples or compounds.

**PISASPHALTUM**, i. e. *succinum*, *amber*. See **AMBER**.

**PISACUM INDICUM**, Barbadoes tar.

**PISSELÆUM** (*πισσελαϊον*, from *πισση*, *pitch*, and *ελαϊον*, *oil*), oil of pitch. Wool is said to be spread over boiling pitch, and when it is soaked with the rising vapour it is wrung into a vessel; and this is repeated as long as the pitch is boiling.

**PISSING OF BLOOD**. See the article **STALING**.

**PISSING-BALLS**, balls calculated to increase the secretion of urine. See **BALL** and **DIURETIC**.

**PISTE**, in the manege, the tread or tract that a horse makes upon the ground he goes over. The language is "This horseman observes the piste, and makes it his business to follow the tread;" that is, he follows his ground regularly, without enlarging or narrowing, without traversing or entangling: such a horse "works well upon two treads;" he works well with one piste.

**PITCH**, inspissated tar. See **TAR**.

**PITCH**, Burgundy. See the article **BURGUNDY PITCH**.

**PITUITA**, phlegm, is the most viscid and glutinous part of the blood, which is separated in the largest glands, where the contortions of the arteries are greatest, and give the greatest retardation to the blood's velocity, as in the glands about the mouth and head.



**PITUITARY GLAND**, a small spongy body, lodged in the sella sphenoidalis, between the sphenoidal folds of the dura mater: it is of a singular substance, not appearing to be either medullary or glandular; on the outside it is partly greyish and partly reddish, and white within. It is transversely oval, and on the lower part, in some subjects, it is divided by a small notch into two lobes, like a kidney-bean. It is covered by the pia mater as by a bag, the opening of which is the extremity of the infundibulum; and it is surrounded by the small circular sinuses, which communicate with the sinus cavernosi.

**PITUITARY MEMBRANE**, that which lines the whole internal nares, the cellular convolutions, the conchæ, the sides of the septum narium, and, by an uninterrupted continuation, the inner surface of the sinus frontales and maxillares, &c. It is also continued down from the nares to the pharynx, septum palati, &c. It is termed *pituitary*, because that through the greatest part of its extent it secretes a mucilaginous fluid called *pituita* by the ancients. In all animals, this membrane is of different structures in different parts; sometimes it is thin, in other places it is thick and spongy. It is thickest on the septum narium, the seat of the GLANDERS in horses, on the lower portion of the inner nares, and the conchæ. In the sinuses it is thinner; on the side next the periosteum and perichondrium it is plentifully stored with small glands. See Plate XIV. and the description of parts forming "the head," under the article HORSE.

**PLACENTA** (from *πλακούς*, a cake; so called from its likeness to a cake); a congeries of blood-vessels which adhere to the uterus during gestation. It is, together with the membranes and funis umbilicalis, excluded generally after the fœtus. These, all together, are called the *after-burden*, the *after-birth*, and the *secundines*. The placenta has different shapes and dimensions in different animals. In the human subject it is a round cake, thick in the middle, and thinner towards the edges; sometimes, however, it is oval, at others it is divided into two, as it were, adhering to each other by the membranes. It has an internal convex surface, where the funis is inserted, and an external concave surface, which seems composed of lobes. When there are more than one fœtus brought forth, each has its separate placenta, or where these appear united, they are really distinct, having no communication of vessels. The placenta generally adheres to that part of the uterus which it happens to fall upon. It is

made up of one vein; and of two arteries, which ramify together, the largest being on the internal surface; and even the parenchymatous substance appears by injections to be quite vascular. No nerves were ever found in the placenta either of the human or brute species. See the article OBSTETRICS.

**PLANCH-SHOE**, or **PANCELET**, a kind of shoe, calculated to favour the growth of a horse's hoof, and to preserve the latter from being worn by stones or gravel. The use of it, however, is not consistent with the new principles on which horses are now shod.

**PLANET-STRUCK**, or **SHREW-RUN**, as it is vulgarly called. This distemper in horses is no other than the *catalepsy*, or palsy; being a privation of feeling or motion. Not stirring any of their members, they remain in the same form as when first seized. It is a universal spasm, and to be treated like a convulsive or paralytic disorder.

The ancient farriers, and many of the country people to this day, when they see a horse or bullock have his limbs suddenly taken from him, and not being able to think what should be the cause of such an unexpected change, believe him either to be planet-struck or shrew-run: but these symptoms are owing to known causes, and therefore should be treated as directed above. See PALSY, &c.

**PLANTARES**, branches of the nerve called *popliteus*.

**PLANTARIS**, the name of a muscle whose tendon covers the planta, the sole of the foot in the human subject. It is shewn, in the horse, in Plate X. See the description of parts in the "right lower limb," under the article HORSE. The artery and vein in the foot are also named *plantaris*.

**PLANTED**, a term used of a horse. He is said to be well planted when he stands equally firm on all his legs, and not with one advanced before the other. His legs should be wider above than below, that is, the distance between his feet should be less than between his fore-thighs, at that part next to the shoulders; the knees ought not to be too close, but the whole leg should descend in a straight line to the very pastern-joint, and the feet should be turned neither out nor in, the pastern being placed about two fingers breadth more backwards than the coronet. As for his make behind, his hams should not be too close, and the instep, which is betwixt the hock and the pastern-joint, should stand perpendicular to the ground.

**PLANTS**. Under this general name are included trees, shrubs, under-shrubs, and herbs.

Most plants are hermaphrodite, having the male and female parts in the same flower; others bear flowers on the same stem, some of which are male and others female; of this sort are the melon and cucumber. Some whole plants bear flowers, which are never followed by any fruit; whilst others of the same species bear fruit with flowers, and hence are distinguished into male and female plants; of this sort are the hop, hemp, poplar tree, &c. The female flowers are only followed by fruit; the hermaphrodites are reckoned among the female in this respect. Instances are well authenticated of the fecundating farina, from the male flower, being carried to the female of the same species to the distance of fourteen leagues.

Plants can no more exist without nourishment and air than animals can. Their nourishment is drawn from putrefactions, exhalations, &c. existing in the soil; they perspire copiously; they attract the mephitic vapours from the atmosphere by the upper surface of their leaves, and give out oxygen gas, or *pure air*, during sunshine, by their under surface. Thus the radical fibres attract a part, and the leaves imbibe another portion, of nourishment; the first from the earth, the latter from the air.

Though, in common language, the word *plant* is synonymous with vegetable, it is, in medicine, used in a more restricted sense. Plants, in the Linnæan system, in respect to sex, take their denominations from the sex of their flowers in the following manner: 1. *Hermaphrodite plants* are such as upon the same root bear flowers that are all hermaphrodite, as in most genera. 2. *Androgynous*, male and female, such as upon the same root bear both male and female flowers, as in the class *Monœcia*. 3. *Male*, such as upon the same root bear male flowers only, as in the class *Diœcia*. 4. *Female*, such as upon the same root bear female flowers only, as in the class *Diœcia*. 5. *Poligamous*, such as either in the same individual plant, or in different individual plants of the same species, have hermaphrodite flowers, and flowers of either or both sexes, as in the class *Polygamia*.

To the vegetable kingdom we owe many valuable articles of the *Materia Medica*. From this source, indeed, at one period, almost our only remedies were derived; but the higher properties of mineral substances have occasioned the gradual rejection of a great number. The tribe of plants most relied on are the *narcotic*. See *NARCOTICS*.

*PLANUM OS*, the external lateral portion of the ethmoides. Its outside next the orbit of the eye is smooth, whence its name.

*PLASTER*, or *PLAISTER*, in the farrier's dispensatory, a composition made of oils, wax, rosin, gums, roots, and many other things reduced to powder, but so compounded and mixed with adhesive ingredients, that it keeps a solid form, and adheres close to any part to which it is applied. All outward intentions of ripening, drawing, detarging, and repelling, are aimed at by plasters; and in some cases they are very serviceable, though they are but little used to horses, because of the hair, which makes them somewhat difficult and troublesome. Likewise, as some of them are hard to be made, *charges* (see *CHARGE*), which are only a softer kind of plasters, have been preferred, instead of them, in the practice of most farriers. Yet in some cases plasters are more convenient and useful than these; their effects being of longer duration. Many of the dispensatory forms that are chiefly made use of will be found under their proper heads. A few instances here will therefore suffice.

#### *Red-Lead Plaster.*

Take of Red lead, nine ounces;  
Oil of olives, one pound and a half;  
Vinegar, six ounces.  
Boil to a due consistence.

This plaster requires much the same care in making as diachylon, and is good in all the same intentions.

#### *Red-Lead Plaster, with Soap.*

Take of Olive oil, two pounds;  
Red lead, one pound;  
Castile soap, half a pound.

First boil the red lead and oil, till they are incorporated together; adding a little vinegar to separate the parts of the red lead; and till the watery parts are evaporated. This may be known by letting a little of it cool, and squeezing it between the fingers: if it sticks, and no water squeezes out, it is enough. Then add the soap in thin slices; and when all is thoroughly incorporated, take it off the fire, and make it up into rolls.

This is reckoned a good plaster, and proper for horses after old strains by hard labour, or other accidents.



## PLA

### *Sulphur Plaster.*

Take of Balsam of sulphur, three ounces;  
Yellow wax, half an ounce;  
Rosin, three drachms;

Melt them together, and add

Myrrh in fine powder, three ounces  
and a half.

Make them into a plaster.

This is an admirable salve to dress wounds and ulcers, and very proper for horses that are obliged to travel with them.

### *Hemlock Plaster, with Ammoniacum.*

Take of Juice of hemlock, four ounces;  
Vinegar of squills,  
Gum ammoniacum, of each eight ounces.

Dissolve the gum with the juice over a gentle fire; and continue stirring, till the juices are evaporated, and the whole brought to the consistence of plaster. This is a discutient plaster, and may be applied to dissolve hard knotty swellings, in any part of the body of a horse.

### *Strengthening Plaster.*

Take of Common pitch, half a pound;  
Red-lead plaster, or diachylon, fix ounces;  
Common turpentine, two ounces;  
Oil of olives, half an ounce.

Melt all these together, in a pipkin, continually stirring them; and, when they are dissolved, add

Bole in fine powder, four ounces;  
Dragon's-blood, one ounce;  
Myrrh,  
Aloes, in fine powder, of each an ounce and a half.

Or,

Take of Diachylon, four ounces;  
Common pitch, half a pound;  
Yellow wax, two ounces;  
Oil olive, eight ounces;

Break the pitch into small pieces; cut the plasters and wax into thin slices; and dissolve them in the oil; then add

Frankincense,  
Myrrh,

## PLA

Mastic,  
Aloes, in fine powder, of each an ounce;  
Dragon's-blood,  
Bole armoniac, of each two ounces;  
Powdered galls, an ounce and a half.

Mix them all together, and continually stir them. Make it into a mass fit to be formed into rolls.

These last are recommended by Gibson to be applied to parts that have been newly strained. They may be spread on leather, shaving away the hairs when applied to a sinew; but if it be to the shoulder or hip, he says, the better way is to dissolve and apply it *chargewise* all over the part, covering it with flocks or hair of the horse's colour, and renewing it as often as it begins to crumble, until the part is strengthened.

**PLASTIC POWER**, forming energy, or organizing principle (from *πλασσω*, *fungo*, to form, and *πλάσμα*, *figmentum*, the workmanship). By this is meant a power or faculty inherent in animal and vegetable organization, by which it grows, repairs injury, or extinguishes disease, and is propagated.

**PLASTICS**, the same as **NUTRIENTIA**.

**PLAT-VEIN**, or **PLATE-VEIN**, in a horse, a vein running on the inside of each fore-thigh, a little below the elbow, so called among common farriers. It is the basilic vein.

**PLATE-LONG**, a woven strap, four fathoms long, as broad as three fingers, and as thick as one, formerly made use of in the manege for raising a horse's legs, and sometimes for throwing him down, in order to facilitate the operations of the farrier.

**PLATINA**, a Spanish word, and a diminutive of *plata*, which in that language signifies silver; so *platina* is little silver. It is a perfect metal which comes to us in small grains, resembling iron-filings. It is without smell and taste, of a whitish-grey colour approaching to that of a polished steel, and of a specific gravity, Beaumé says, equal to that of gold. Lewis observes, that its specific gravity is somewhat less than that of gold. In general it is found to be with respect to gold as eighteen and a half to nineteen. It is a genus in the class of metals.

**PLATISMA-MYOIDES** (from *πλατύς*, broad, and *μύς*, a muscle), also called *depressor maxillæ inferioris*. In the human subject this muscle rises from the skin insensibly below the clavicle, is inserted into the basis of the lower

jaw; then runs up and joins the triangularis, and is inserted into the angle of the mouth and the skin of the cheek. It depresses the lower jaw.

**PLETHORA** (from *πληθος*, *plenitude*), that state of the blood-vessels when they are too much loaded with fluids. The plethora may be sanguine or serous; in the first, there is too much crassamentum in the blood; in the latter, too little. In a sanguine plethora there is danger of a fever, inflammation, apoplexy, rupture of the blood-vessels, obstructed secretions, &c.; in a serous, a dropsy, &c. A rarefaction of the blood produces all the effects of a plethora; it may accompany a plethora, and should be distinguished from it. A sanguine plethora may be known by the pulse (see **PULSE**). An artery overcharged with blood is as incapable of producing a strong full pulse as one that contains a deficient quantity; in both cases there will be a low and weak pulse. To distinguish rightly, the pulse must not be felt with one or two fingers on the carpal artery; but if three or four fingers cover some length of the artery, and we press hard for some time on it, and then suddenly raise all these fingers, except that which is farthest from the source of the circulation, the influx of the blood, if there be a plethora, will be so rapid, as to raise the other finger, and make us sensible of the fulness. Linnæus observes, that in the sanguine plethora there is a redness of skin from the fulness of blood, attended with a dyspnoea. The sanguine plethora is relieved by bleeding; the serous by purging, diuretics, &c.

**PLEURA** (from *πλευρα*, *the side*). Both in men and quadrupeds the chest is lined with a membrane thus called. It is smooth inwardly, but rough outwardly, where it is attached by cellular membrane to the adjoining parts; it covers the diaphragm, as the peritonæum covers it on the underside; where it passes to the spine, it covers the lungs, and makes a complete bag on each side, which duplicature forms the mediastinum. The use of the pleura is to give the contained viscera a smooth surface, and to confine a lubricating juice, which is supposed to be secreted by the extremities of the arteries; and the mediastinum serves to keep the heart more fixed in the centre of the body, and prevent wounds of one side the thorax from affecting the other. The pleura is of a firm texture, and has many blood-vessels running in it. It is subject to inflammation. See **PLEURISY**.

**PLEURISY**, an inflammation of the *pleura*, which is the membrane that lines the inside of

the chest. So nearly alike are the discoverable symptoms of this disease, and of the peripneumony, in the horse, that it has been thought expedient to speak of both at the same time; and the more especially as the treatment in either case is suitable to the other. Till Gibson wrote on pleurisy and peripneumony, they had been scarcely so much as mentioned by writers on the subject of farriery, and not in the least understood by the generality of practitioners, though it is well known that these diseases are not much more uncommon among horses than among men.

The pleurisy generally seizes one side only; but the peripneumony is an inflammation of the whole substance of the lungs, and when that is violent, the pleura is also for the most part inflamed.

Pleurisy is often occasioned by too hard riding, or by hard work of any kind, especially in young horses that have been high fed, and have had but little exercise. Suffering a horse to cool too soon when he has been heated with exercise; riding a horse deep in cold water when he is hot; exposing him to stand long in a sharp cold or damp air, and such like imprudences, are most frequently found to produce internal inflammation. The causes of a peripneumony are the same, except that, in the latter, there is generally a plethora, or some previous disorder in the lungs, or some very severe cold.

The signs of a pleurisy and peripneumony, as has been observed, are very much the same; perhaps only with this difference, that, in a pleurisy, the horse shews great restlessness and uneasiness, shifts about from place to place. The fever, which at first is moderate, rises suddenly to a very high degree. In the beginning he often strives to lie down, but starts up again immediately, and frequently turns his head towards the affected side. This last has caused many to mistake a pleuretic affection for the gripes, the sign just mentioned being common to both; though there is this difference, that, in the latter, a horse frequently lies down and rolls. When the gripes are violent, he will also have convulsive twitches, his eyes will be turned up, and his limbs stretched out as if he was dying, his ears and feet being sometimes excessively hot, and sometimes as cold as ice. He falls into profuse sweats, and then into cold damps; strives often to stale and dung, but with great pain and difficulty, which symptoms generally continue till he has relief. On the other hand, in a pleurisy, a horse's ears and feet are uniformly and excessively hot, and his mouth parched and dry; and even sometimes when he is near dissolu-



tion, his fever is continued and increasing. And though in the beginning he makes many motions to lie down, yet afterwards, he reins back as far as his collar will permit, and makes not the least offer to change his posture, but stands panting with short stops, and a disposition to cough, till he has relief or drops down and expires.

In a peripneumony, there exist several of the same symptoms, only in the beginning he is less active, and never offers to lie down, even during the whole time of his sickness. His fever is at the same time considerable. In a pleurisy, a horse's mouth is generally parched and dry; but in a peripneumony, when it is opened, a roapy slime will, for the most part, run out in great abundance, and he will gleet at the nose, much in the same manner as in a malignant fever, viz. a reddish or yellowish serum, or coagulable lymph, will adhere to the inside of the nostrils. In a pleurisy a horse heaves and works violently at his flanks, has great restlessness, whilst, for the most part, his belly is tucked up; but in a peripneumony he always shews fulness, and the working of his flanks is regular, except after drinking, or when any thing is administered with a horn, or at any time when, through uneasiness, he attempts to change his posture, then the heaving is stronger and more vehement than at other times: his ears and feet are, for the most part, always cold, and he often falls into damp sweats, with other symptoms common to malignant diseases, except that they come on more suddenly and with greater violence.

The cure of a pleurisy and of a peripneumony are the same, except where accidental symptoms require some variation; for in fact it often happens that both are conjoined, and then it is hardly possible to distinguish either. Copious bleeding, and most other evacuations, are absolutely necessary in all such cases. In the beginning a strong horse may lose three quarts of blood at once, and the next day, or sooner, if the symptoms continue violent, two quarts more may be taken from him: if he be old, or has any previous weakness, the best way is to bleed often, but take away a less quantity at a time. In the latter case, a horse may lose a quart, or perhaps two, in the morning, and a smaller quantity in the afternoon, which may be repeated the next day, or at a short interval, if the symptoms require it. Rowels are also beneficial. One may be put on each side of the breast, one on the belly, one the same side where he seems to complain; or he may be rowelled on the inside of both his thighs. The actual cautery or blistering are also of great service.

All over his chest, upon the foremost ribs, blistering ointment may be rubbed, or in some cases the skin may be irritated with oil of turpentine.

Internally, all those medicines are proper that have been recommended in inveterate colds; especially where there is a suspicion of inflammation of the parts contained within the chest. See the article CATARRH.

The general treatment of internal inflammation, as practised at the VETERINARY COLLEGE, is noticed under the articles THORAX and PERIPNEUMONY. In this place, however, candour obliges us to state the remedies proposed by Gibbon, a most respectable writer, whose great experience and known veracity render his remarks on every part of veterinary medicine worthy of our regard, though few of the modern school, we must suppose, will be inclined to adopt the following prescriptions, which he introduces, nevertheless, with a caution not to give "heating cordials" in pleurisy.

Take of Spermaceti one ounce, rub it in a mortar with the yolk of a new-laid egg.

Add Venice turpentine, half an ounce;

Nitre, in powder, one ounce;

Sugar of lead, two drachms;

Saffron, half a drachm;

Oil of aniseeds, half a spoonful.

Make the whole into one or two balls, with a sufficient quantity of honey or syrup of corn poppies.

These balls are ordered to be given immediately, with a pectoral decoction, of which garlic, horse-radish, and assa-fœtida, form the active ingredients.

"The balls," says he, "are to be repeated twice a-day or oftener, at first, with three or four hornfuls of this pectoral decoction, and in two or three days the horse will probably run at the nose, and begin to feed, which I have seen in several instances, especially in such cases where the pleurisy and peripneumony are joined together. And when this symptom appears, the balls and decoction may be continued till the running begins to abate, and his appetite increases; after that they may still be continued once a-day for a week, only leaving out the sugar of lead.

"If he happens to be costive, and hot inwardly, he ought to have a cooling glyster once a-day, made of fat broth, two quarts, a pound of treacle, and the same quantity of common

linseed oil; one of these may be given every day, or oftener if needful. Pot liquor, wherein beef or mutton has been boiled, makes a very good decoction for a glyster; the salt in the pot liquor, being but little in quantity, will have no other effect, than to make it a small matter purgative."

"I have known emollient glysters have an extraordinary effect in many such complaints, by fetching away great quantities of dung, pent up in the bowels, by viscid, slimy, or greasy matter, as it is generally termed; which, if not the primary and original cause of the distemper, has had a great share in aggravating all the symptoms that have attended it. But where none of these symptoms are apparent, and that the horse continues hot, restless, and short-breathed, and refuses to feed, notwithstanding the things above prescribed have been regularly complied with, recourse must be had to bleeding, but not in such large quantities as at first; purging glysters are also necessary, with the continuance of the balls and drinks." For a purging clyster the author recommends the following:

Take leaves of senna,  
Roots of marshmallows, of each  
two ounces;  
Sweet fennel seeds, bruised,  
Bay berries, of each an ounce.

Boil in five pints of water to two quarts,  
strain the decoction through a sieve,  
and add,

Lenitive electuary, four ounces;  
Syrup of buckthorn, two ounces;  
Linseed oil, half a pint.

To be given with all expedition, luke-warm.

"This will purge a horse without much pain or griping; whereas the common glysters made with Barbadoes aloes and *bitter apple*, are apt to fret and inflame the bowels; and, instead of giving relief in these acute inflammatory distempers, usually aggravate the symptoms and make them worse.

"If the horse grows cooler, and his pain more moderate, after the use of these means, you may repeat the glyster the next day, unless he has purged much; in which case it will be better to intermit one day, and repeat it the day following; and if he comes to eat scalded bran, and pick his hay, you need only give him the first prescribed pectoral drink every other day about four hornfuls, till he is fit to be walked abroad, and now and then one of the emollient

glysters. But after all, a horse seldom gets the better of a pleuretic attack, *unless he has relief in a few days*, though I have known some hold it out longer in great pain and sickness, and in the end do well, by attending carefully to all the symptoms, and following the method here laid down.

"But as pleuretic disorders are more apt to leave some taint on the lungs than common colds or other inflammatory disorders, a great deal of care must be taken, upon his recovery, that his feeding be proper and in right quantity, and his exercise well timed. A horse should be kept to a light open diet for a fortnight or three weeks, viz. a quartern of bran scalded every day, and besides that, two or three small feeds of the cleanest and sweetest oats, sprinkled with water, and now and then in his bran a large spoonful of honey and sulphur. Instead of the scalded bran, it will be well to give him sometimes, for a change, about a quart of barley scalded, in a double infusion of hot water, that it may be softened, and the water may be given him to drink. His exercise should be gradual, and increased as he gathers strength, and always in an open free air, when the weather is favourable." If there be any remains of a cough, the air, with moderate exercise, Gibson observes, will greatly help to remove it, and the remedies usually given in chronic affections of the chest should be resorted to. Purging is also proper after pleuretic disorders; "but then," says he, "the purges should be very gentle." The following purge is one of the mildest and best that can be used, which I can recommend as the most safe and efficacious in all such cases:

Take of the finest aloes, an ounce;  
Indian rhubarb,  
Salt of tartar, of each two drachms;  
Saffron, one drachm;  
One middle-sized nutmeg, first  
grated, and then beaten up with  
the other ingredients.

Make these into a ball, with a sufficient quantity of syrup of buckthorn, and roll it in liquorice powder.

"This," continues the author, "may be given with the usual precautions necessary in purging; it will work gently without much sickness or griping. In some I have known it work as briskly as a stronger purge, where the stomach and bowels have been relaxed by indigestion, without any abatement of a horse's strength; but, on the contrary, the horse has



been more vigorous and lively than before, both during the operation and afterwards. This may be repeated three times at proper intervals, viz. once a-week, and will help greatly to carry off the remains of the disorder."

Notwithstanding what has been alleged on this subject, we shall do well to pursue the general treatment practised in other internal inflammations, as set forth in the articles already referred to.

Gibson describes that external affection of the muscles of the chest which farriers usually call chest-founder, under the name of "*External Pleurisy*," but certainly very improperly, as the pleura is not at all affected in it. His observations are given under the article CHEST-FOUNDER.

PLEURODYNE RHEUMATICA; rheumatism in the muscles of the thorax, or bastard pleurisy.

PLEURO-PNEUMONIA, is used by some modern writers for a mixture of a pleurisy and a peripneumonia together, which may happen: and others invert the words, calling it *Pneumo-pleuritis*.

PLEXUS (from *plecto*, to weave together), in anatomy; a kind of net work, or complication of vessels, or of nerves. See GANGLION. Thus the *plexus cardiacus*, or *pulmonaris*, is formed of the reciprocal ramifications of both trunks of the eighth pair, and their mutual communications with the filaments of the intercostal or great sympathetic nerve. It is situated above the lungs, on the fore-side of the bronchia, and it distributes to the pericardium, &c. There is also the *plexus*, called *plexus reticularis*, or *retiformis*. The fornix being cut off, and removed in the human subject, we see a vascular web, called the *plexus choroides*, with several eminences which it covers. The first two great eminences are called *corpora striata*, and the other two are called *thalami nervorum optitorum*. The first small eminences are closely united together, the anterior are called *nates*, and the posterior *testes*. Le Dran explains it to be a folding of the carotid artery in the brain.

PLICA (from *plico*, to fold), a distemper peculiar to Poland, where the hair is matted together in a strange manner, as it grows in a cow's-tail.

PLUMBAGO, plumbage; a substance known by the name of *black lead*, from its shining grey colour. It is a carbonate of iron.

PLUMBUM CORNEUM, *horney lead*. If, to a solution of lead in the nitrous acid, marine acid, or any neutral containing it be added, a white precipitate, in form of a coagulum, is

immediately produced. This has the name of *plumbum corneum*, because when melted in a crucible, it acquires, on cooling, the transparency of horn.

PNEUMA (*πνευμα*), spirit, air, vapour, or the breath. Hippocrates often uses the word *pneuma*, to signify a difficult or short breath.

PNEUMATICS, that part of natural philosophy which teaches the properties of the air.

PNEUMATOCELE (*πνευματοκηλη*, from *πνευμα*, wind, and *κηλη*, a tumor), a flatulent hernia, or windy rupture. It is when wind is contained in the scrotum, when a descent of the intestines there is apprehended to have happened.

PNEUMATOSIS (*πνευματωσις*), i. e. EMPHYSEMA; also a pain in the stomach from wind.

PNEUMATOMPHALOS (*πνευματομφαλος*, from *πνευμα*, wind, and *ομφαλος*, the navel), an umbilical flatulent rupture.

PNEUMONIA (*πνευμονια*), inflammation of the contents of the thorax. The species are the peripneumonia, and pleuritis, which last includes the inflammation of the heart, pericardium, mediastinum, and diaphragm.

PNEUMONICA, a sense of weight, or load on the chest.

POA, meadow-grass, a genus in Linnæus's botany. He enumerates thirty-three species.

POEGEREBA, an American root, used in Paris as an astringent in dysenteries.

POISON. After all that has been said and written on poisons, we are scarcely arrived at a knowledge even of the term. The word poison seems to have been scarcely understood. It bears, in fact, a relative signification only. What are called poisons have, in various instances, salutary effects; and they injure only by misapplication. It is difficult, if not impossible, then, to define the word *poison*. That alone is properly called *poison*, or to be considered as *absolutely a poisonous substance*, which *at all times, in any quantity, and on all occasions* of applying it, would, *without exception*, be *destructive*. Such a substance is perhaps unknown.

This subject is therefore very difficult to investigate; it is abstruse in its nature, and yet important in its consequences. By authors very little has been said that is satisfactory; yet no subject better deserves the attention of the ingenious.

Whether all the substances reputed poisonous to the human subject are to be deemed such when administered to quadrupeds, is doubtful; as is also the fact, whether peculiar exceptions are not to be made with regard to each

species of the latter. Opium is probably an exception with regard to the horse, though it may, in all likelihood, be made to poison some of the inferior brute animals. Experiments are greatly wanted to ascertain these points, especially, as, in making them, some discovery may be made of most valuable remedies. Our business here, however, is only to consider poisons with a view of preventing their fatal effects when accidentally taken. Under the article *ANTIDOTE* we have suggested some means, which, we trust, may not be useless; and here it may be sufficient to speak of those poisons which produce their effects by admission into the blood. Of this description may be reckoned the bite of a mad animal (see *DOG*), the bites of venomous reptiles, such as the viper, &c.

We are not fully informed as to the effects of the latter on the different animals obnoxious to its attack; but we conceive them to be much less formidable than in man. Some degree of analogy, however, must exist between the two cases; for which reason we shall here describe the symptoms as they occur in the latter.

The symptoms which follow upon the bite of that creature are, an acute pain in the place wounded, with a swelling, at first red, but afterwards livid, which by degrees spreads further to the neighbouring parts, with great faintness, and a quick, though low, and sometimes interrupted, pulse; great sickness of the stomach, with bilious convulsive vomitings, cold sweats, and sometimes pains about the navel; and (according to Dr. Mead), if the cure be not speedy, death itself, unless the powers of nature be sufficient to overcome the disorder, which sometimes happens. The wound runs with a sanious liquor, and the colour of the whole skin is changed yellow, as in the jaundice. The bite is accompanied with an effusion of a poisonous juice that the viper instils into the wound; and though this be in an inconsiderable quantity, yet its execution is very surprising.

The pungent salts with which the venom abounds, when thus thrown into the wound, irritate the sensible parts, and there necessarily follows a greater afflux than ordinary of the animal fluids to the wounded part, which soon becomes swelled, inflamed, livid, &c. Those poisonous spicula being also mixed with the blood, and carried to the distant parts of the body, and even to the heart itself, may produce the most dangerous consequences.

The effects of such an admixture with the blood must not only be a disturbed circulation, and an irregular and interrupted affection of the spirits, indicated by a low pulse, fainting, sick-

ness, palpitation, convulsive vomitings, tremblings, &c. but also violent pain and inflammation of the wounded part. By the effect produced on the nerves, a constriction of the gall-duets is also occasioned; the bile regurgitates on the liver, is mixed with the blood, and produces jaundice. Happily, however, a fatal event seldom, if ever, attends. This accident, in man, we have reason to believe, admits of being remedied by a few drops of oil; and, if so, the effects of this apparently active poison need by no means to be dreaded in brute animals, whose less delicate structure enables them to bear, without injury, local irritations which would prove extremely formidable to the human body.

Another species of animal poison, taken notice of by Dr. Mead, is that of the *mad dog*, which, he says, induces pretty much the same symptoms, in time, with the addition of an hydrophobia, or dread of water. The rabies, or madness, in a dog, he adds, is the effect of a fever; and therefore it is most common in excessively hot weather, though sometimes intense cold may cause it. "No dog, in this case," says he, "ever sweats: from whence it follows, that, when his blood is in a ferment, it cannot, as in other creatures, discharge itself upon the surface of the body. For this reason, much more spittle is separated in a dog, when mad, than at any other time, and that very frothy, or impregnated with subtiler parts. A person affected with hydrophobia may be said, in a degree, to have put on the *canine nature*, though his reason be all this time untouched and entire, may *bite, howl, &c. because the like violent agitation of the blood in him* as was in the dog will present like species, and consequently (so far as their different natures will allow) produce like actions; just as it hath been observed, that sheep, bitten by a mad dog, have run at the shepherd, like so many dogs, to bite him:—so much can an alteration of blood and spirits do."

We notice these opinions chiefly for their singularity (having treated the subject under the articles *DOG*, *MADNESS*, &c.), and to shew how far ingenious men, who forsake the sure path of observation, and give their minds to fanciful hypotheses, may wander from the truth, and even render themselves ridiculous.

Finally, we may consider as poisons, or, at least, as local irritations, the stings of insects, flies, &c. where an acrid fluid is transfused into the wound; but these would lead us to useless minutiae, nature herself having generally a remedy for them; or, if our art should be re-



quired, by the degree of inflammation excited, or the peculiar irritability of the part affected, the common remedies being sufficiently known.

Another mode in which death may be produced is the introduction of certain elastic fluids, or gases, into the lungs. These have been called poisons, and are all included in the term *mephitis*. The most celebrated of this kind is that in Italy, called *Grotto del Cani*, which is a small grotto at the foot of a hill, about eight feet high, twelve long, and six broad. Here, from the ground, rises a thin, subtle, warm fume, visible enough to the eye, which does not spring up in little jets here and there, but issues in one continued steam, covering the whole surface of the bottom of the cave. It has also this remarkable difference from common vapours, that it does not disperse itself into the air, but quickly after its rise falls back again, and returns to the earth, the colour of the sides of the grotto being the measure of its ascent; for so far it is of a darkish green, but higher only of the colour of common earth, and this is but ten inches. No animal, if its head be kept above this mark, is injured by it; but when a dog, or any other animal, is forcibly held below it, or, by reason of its natural shortness, cannot hold its head above it, it presently, like one stunned, loses all motion, falls down as dead, and has no other sign of life left than a faint beating of the heart and arteries, which, if the animal is left longer, ceases too; but if he is snatched out, and laid in the open air, he soon comes to life again, and sooner if thrown into an adjacent lake. Here, in fact, is no real poison (because, if there were, it would be impossible that animals taken out of the grotto should so immediately recover the effects of it), but only a spasm suddenly brought on the bronchial vessels of the lungs, which interrupts their functions, as it were, mechanically. The vapour produced in the grotto is now known to be similar to that produced by fermenting liquors, which is suddenly fatal to all animals. This kind of poison, if it must be so called, is denominated *carbonic gas*, or fixed air.

**POLLARD**, the fine bran or inner husk of wheat.

**POLLEN**, expresses something in a finer powder than what is commonly understood by *farina*. In botany, it means the fine dust contained within the antheræ, and secreted therein, for the impregnation of the germen.

**POLL-EVIL**, a name given to an abscess formed near to the head of a horse, about the

junction of the first vertebra of the neck. It commonly proceeds either from a blow or hurt received on the head, as by his accidentally striking it against the ceiling of a low stable. Mr. DENNY advises, that whenever this is perceived, by a tumour forming about this part, the earliest and most active means should be employed to disperse it.

"The most effectual remedy," he says, "is that of anointing the inflamed parts with blistering liniment; for, by this simple treatment alone, an abscess may generally be prevented. Whenever the inflammation, however, has proceeded to suppuration, as soon as the matter can be distinctly felt, an opening must be made as near as possible to the inferior part of the abscess, to allow of a free discharge of its contents, and a seton be introduced through the whole extent of the cavity, which should be frequently moved, and washed with spirits of turpentine. The healing process may be assisted by daily injecting the following lotion into the cavity of the abscess:"

Take of Muriated quicksilver,  
Vitriolated copper, of each, in powder, two drachms;  
Boiling water, one pint: when cold, add  
Tincture of myrrh, two ounces.  
Mix them.

If sinuses be already formed, and the seton not sufficient to heal the parts, the only mode will be that of laying the parts open, by an incision through their whole extent, after which the following may be used to dress with.

Take of Red precipitate, in powder, half an ounce;  
Ointment of yellow rosin, two ounces;  
Oil of turpentine, half an ounce.  
Mix them.

Over this a large pledget of tow, spread with any simple ointment, may be laid. Nothing more will probably be required than keeping the wound clean, and following the treatment usual in simple wounds.

**POLLEX**, the thumb, or great toe. It expresses also the fourth degree in the Linnaean scale for measuring the parts of plants; the length of the first joint of the thumb, or a Parisian inch.

**POLYCHRESTON** (*πολυχρηστος*, *ad multa utilis*), the same as **POLYPHARMACON**, a medicine of many virtues, or that will cure many diseases. It has therefore been conceitedly given

to many preparations and compositions which have been far from deserving such cucumium, and some of which yet remain in the common dispensaries.

**POLYGALA VERA**, the milk-vetch.

**POLYGONUM**, knot-grass, a genus in Linnæus's botany. He enumerates thirty-one species.

**POLYPUS** (from *πολυς*, many, and *πες*, a foot). This name is generally applied to a kind of fish found in the Adriatic sea, which has eight claws or legs, which serve it to swim with, and to convey aliment to its mouth. When applied to an animal body, coagulations and concretions of blood in the blood-vessels are thus called, because they send off many ramifications into the adjacent vessels. The true polypus is only such a concretion of blood as consists of a whitish, fibrous, and pretty compact substance, and differs widely from grumous or coagulated blood, which, when found, is called the *bastard-polypus*: this is a solid fibrous concretion, formed of the more viscid parts of the lymph. In Dr. Cullen's Nosology, it stands a synonyme with *farcoma*.

The seat of these is in the sinuses of the brain, the ventricles of the heart, the jugular veins, the veins in the uterus, and in any artery or vein. Dr. Hunter, in his lecture on the blood, asserts, that this is no disease in the living body, for the polypuses found in the blood-vessels are not formed till the body is dying. Those that are the objects of manual operation, both in the human and brute subject, are seated in the nose, the uterus, or the vagina. These are instances of the *farcoma*. See the article **NOSE**.

**POLYSARCIA** (from *πολυς*, much, and *σαρξ*, flesh); *obesitas*, *corpulentia*, corpulence. Vogel, to express corpulency, makes use of the term *steatitis*. In horses, and other animals not destined for human sustenance, it may be called a species of cachexy, for many disagreeable symptoms attend it; such as slowness of motion, oppression, weakness, difficulty of breathing, sweating on the least exercise, inflation, distention, &c. The ill effects of corpulence in the horse are noticed under the articles **FOOD**, **FATTENING**, &c.

**POMATUM** (from *pomum*, an apple), an ointment wherein apples originally formed a considerable part; but what is now used under that name is only scented fat or suet.

**POMUM ADAMI**, a name for the protuberance in the fore part of the neck, in the human subject, formed by the thyroid cartilage. This protuberance, it is thought, received its name from a whimsical supposition, that part of

the forbidden apple which *Adam* eat stuck in the throat, and thus became the cause.

**PONDUS**, a weight. See **WEIGHT**.

**POPE'S-EYE**. See **GLANDULA POPLITÆA**.

**POPLITÆA ARTERIA**. In the human subject, the arteria cruralis, in passing the ham, takes the name of *poplitea*, which, whilst in the ham, is covered only by the integuments. It ends by dividing into the tibialis anterior and tibialis posterior. The crural vein takes the name of *popliteal*, just above the ham, and at the lower part of the musculus popliteus, it divides into the tibialis posterior and the peronæa.

**POPLITÆA GLANDULA**, the popliteal gland, or *pope's eye*. See **GLANDULA**.

**POPLITEUS**. The sciatic nerve, having reached the ham, takes this name; it divides into two branches, which spread about the whole leg. Popliteus is also the name of a muscle that arises from the external and inferior protuberance of the thigh-bone, and, passing over the joint obliquely, is inserted into the superior and internal part of the tibia. This assists in bending the leg, and turns it inwards.

**POPPY**, the *papaver somniferum* Linn. Poppies are found wild in some parts of Europe, and several varieties are produced by culture. The white poppy only is used in medicine. The head, stalks, and leaves, have an unpleasant smell, and a bitterish biting taste, of the same kind with those of opium. The smell and taste are lodged in a milky juice, which abounds chiefly in the cortical part of the heads. This may be collected in considerable quantities by slightly wounding them when almost ripe, and, when the juice is run out, pressing out what did not run, and which, on being exposed for a little time to a warm air, thickens into a tenacious dark-coloured mass, similar to the opium brought from Turkey, &c. It is weaker as a medicine; one grain of foreign opium is often equal to two of ours, yet it is stronger in smell and taste. The juices obtained from the white or the black poppy differ no other than in the quantity afforded by each; the white affording the largest quantity. The seeds contain an insipid oil, used for the same purposes as the olive oil; it is obtained by expression, and is void of the narcotic quality of the poppy-head. If the powers of opium are doubted as a veterinary remedy (see **OPIMUM**), still more may we suspect the insufficient qualities of this vegetable.

**POPULEON**, the name of an official ointment from the poplar-leaves, which are its chief ingredient. It has been employed by farriers.



**PORES** (*pori*, from *περσσω*, to *pass through*). It is supposed that one grain of sand will cover one hundred and twenty-five thousand of the pores in the human skin, and that each pore is the orifice of a distinct gland (see **CUTICLE**). Plants perspire as well as animals; but, notwithstanding the great perspiration of both, pores cannot be discovered either in the animal cuticle, or in the fine membrane that covers the external surface of the leaves.

**PORRACEOUS**, is said of any thing resembling a leek in colour or scent; as of the bile, or what is sometimes discharged by vomiting or stool, and appearing of a green colour.

**PORTA**, or **VENA PORTÆ**. This was so called by the ancients, because they thought it brought the chyle by its meseraic branches from the intestines to the liver, through whose substance it is spread. As it rises out of the liver, it receives two small veins from the vesica fellis, called *cysticæ gemellæ*, one from the stomach called *gastrica dextra*; then advancing a little to the left, its trunk divides into two branches, of which the least, called *ramus splenicus*, goes to the left hypochondrium; and the greatest, called *mesentericus*, goes to the right. The *ramus splenicus*, so called because it carries the blood from the spleen, receives two branches, called *gastrica minor* and *major*, which are spread through all the stomach. A branch of the *gastrica major* makes the coronariæ stomachicæ at the upper orifice of the stomach. It receives three branches more, two from the omentum and colon, and the third from the pancreas.

Then the splenicus divides into two branches; the one superior, the other inferior. The superior receives the *vas breve*, and some other branches which come from the spleen. The inferior receives two branches, viz. the *epiplois sinistra*, which is spread through the back part of the omentum, and that part of the colon which is under the stomach. The other branch is the *gastro-epiplois sinistra*, which is also spread upon the omentum, and upon the stomach. It makes sometimes the *vena hæmorrhoidalis interna*. The rest of this inferior branch comes from the substance of the spleen.

The right branch of the porta, called *vena mesenterica*, before it divides, receives the *gastro-epiplois dextra*, which is spread in the omentum and lower part of the stomach; as also the *intestinalis*, which comes from the duodenum and the jejunum: it receives some branches from the omentum and pancreas.

Then the mesenterica divides into three great branches which run betwixt the duplicature of the mesentery: two of them come from the

right side, which divide into fourteen branches; and these are again divided into an infinity of smaller ones, which are called *meseraicæ*; they creep upon the jejunum, ilium, cœcum, and part of the colon.

The third and last branch of the *vena mesenterica* is spread through the middle of the mesenterium, to that part of the colon which is on the left side of the rectum, down to the anus, where it forms the *hæmorrhoidales internæ*. See **LIVER**.

In Plate XXIII. the *vena portæ* is shewn as it arises from the intestines, with its distribution through the seven lobes of the liver in the horse.

*a* Is the trunk of the *vena portæ*.

*b* A principal branch that arises from the stomach, the spleen, duodenum, omentum, &c. and opens into the trunk of the *vena portæ* near its middle.

*c* Another principal branch that rises chiefly from the veins of the mesentery, the gut colon, and from the rectum or straight gut.

*d* A considerable branch from the mesentery, the colon, and cœcum or blind gut.

*e* Two considerable branches from the mesentery and colon, that unite near the trunk of the *vena portæ*.

*ff* Several considerable branches of veins that arise from the mesentery, and from all the small guts and other intestines, and open into the entrance of the *vena portæ*.

*gggg* The branches of the *vena portæ*, as they are distributed through all parts of the liver.

**PORTIO DURA**, } In the human sub-  
**PORTIO MOLLIS**. } ject, the seventh pair of nerves enter the os petrosum, and there divide into two branches, called *portio dura* and *portio mollis*. The *portio dura* goes out between the styloid and mastoid processes, passes through the carotid, becomes a cutaneous nerve upon the face, and communicates with the upper maxillary nerve. The *portio mollis* is spent upon the labyrinth in the ear; it enters the *meatus auditorius internus*, and passes to the vestibulum and cochlea.

**PORUS BILARIUS**, the bile-duct, or gall-passage. See **GALL**.

**POSTERIOR**, an anatomical term denoting the situation of some muscle, blood-vessel, nerve, &c. of an animal body, in reference to a similar part differently situated. Instead of *foremost*, *hindmost*, *upper*, and *lower*, anatomists say *anterior*, *posterior*, *superior*, and *inferior*, which are more technical, though their meanings are the

## POU

same. Thus the *abductor auris* is called also the *posterior muscle of the ear*.

**POSTICUS**, that which is situated behind, or on the backside; as the *tibialis posticus*. See Plate XIII. and the explanation of parts composing "*the lower limbs*," under the article **HORSE**.

**POTENTIAL**, a term occasionally applied to *heat* and *cold*. It denotes a relative quality, signifying that such a thing is not hot or cold to the touch, but in its effects. This is supposed to arise from the check or retardation to the blood's motion, if *cold* be applied, whereby the perception of change in the organs of feeling is denominated *cold*. Hence every thing that lessens the motion of the blood, with relation to the sensation before made, is *potential cold*, and every thing which increases it may be called by the name of *potential heat*.

**POLION**, a liquid form of medicine, calculated for one dose or draught.

**POT-ASH**, or **POT-AS**, an alkaline salt procured from vegetable substances by burning them. See **KALI**.

**POULTICE**, a soft mass of ingredients, calculated either to soothe an inflamed or ulcerated part by the mere effects of warmth and moisture, or to produce some effect by its stimulus.

Mr. John Lawrence supplies us with various forms of poultice according to the effect intended to be produced :

### *Common Poultice.*

Take of Milk half a pint;  
Salad oil, three large spoonfuls;  
Grated bread, enough to make it of a due consistence.

Add the bread to the milk when boiling, afterwards beat in the oil thoroughly.

### *Suppurative Poultice.*

Take of the leaves of mallows, either green or dry,  
Marsh-mallows, together, about twenty handfuls;  
White lily roots washed and pounded, half a pound;  
Linseeds;  
Fenugreek seeds, bruised, of each four ounces.

Boil these very soft and pulpy, and add

Elder ointment, four ounces;  
Lard as much as is needful.

Mix the whole together, and keep for use.

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### *Digestive Poultice.*

Take of Oatmeal, a moderate quantity;  
Strong beer grounds, as much as will sufficiently moisten it;  
Lard, a small quantity.  
Turpentine, one or two ounces, according to the degree of stimulus required.

Or,

Take of white lily roots,  
Linseed,  
Rye-flour; of each a sufficient quantity.  
Add the other ingredients as above.

### *Resolvent Poultice.*

Take of Onions;  
Camomile flowers boiled;  
Lard, or neat's foot oil, of each a suitable proportion.

Mix.

This is very efficacious, according to Mr. Lawrence's account, to disperse swellings.

Or,

Take of Oatmeal, half a pint;  
Cummin seeds, powdered, two ounces;  
Camphor, in powder, half an ounce;  
or,  
Sal ammoniac, dissolved in British spirit, the like quantity.

Mr. Lawrence employs this in bruises, and with a view to disperse the coagulated blood.

### *Anodyne Poultice.*

Take of Camomile;  
Elder leaves, or flowers;  
Poppy-heads;  
Bay-leaves;  
Rosemary.

Boil them soft, and add a sufficient quantity of oatmeal, some elder ointment, and a little camphorated spirit.

### *Restringent Poultice.*

Dissolve Alum in vinegar, or verjuice.  
Add half the quantity of oil, with some red wine lees, or stale beer grounds, and bean meal.

Or,

Take of old verjuice, or distilled vinegar, one quart;



Alum, one ounce;  
Currier's shavings, or oak-bark, a  
sufficient quantity.  
Boil these into a poultice, with or with-  
out saturnine ointment, and apply it  
warm twice a-day.

We trust we shall not be suspected of want of  
candour, if we object to some of the foregoing  
compounds, as possessing the multifarious cha-  
racter of the old prescriptions. The following  
more simple forms appear to us, we confess,  
more consistent with sound principles, and the  
improved state of veterinary surgery.

*Common Poultice.*

Take of Bran, a quarter of a peck;  
Water, a sufficient quantity.

Boil for ten minutes; and then thicken  
it properly with linseed meal. Add  
lastly,

Hog's lard, three ounces. Mix.

*Or,*

Take of fine pollard, half a peck;  
Linseed meal, two pounds and a half;  
Boiling water, a sufficient quantity.  
Add lastly,  
Hog's lard, two ounces. Mix.

*Fermenting Poultice.*

Boil a quantity of brewer's wort, and stir  
into it as much oatmeal as will  
properly thicken it. Add lastly a  
tea-cupful of yeast.

This is well adapted for putrid ulcers or  
mortified parts.

*Saturnine Poultice.*

Add to the common poultice,  
Extract of lead, three drachms or  
half an ounce.  
Mix them well together.

*Or,*

Take of acetated ceruse (sugar of lead), one  
ounce;  
Boiling water, three quarts. Add  
Bran and linseed meal, enough to  
make the whole of a due con-  
sistence.

A *suppurative poultice* may be made by stirring  
a sufficient quantity of common turpentine into  
some of the common poultice.

An *anodyne poultice* may be prepared in the

same way, by adding a sufficient quantity of tin-  
cture of opium. In this case probably the lard  
had better be omitted, as tending to prevent the  
free access of the principal ingredients to the  
skin. Indeed an *abundance* of grease or oil in  
poultices is a common error in their composi-  
tion.

These remedies admit of being varied in a  
still greater degree by similar means.

PRÆCORDIA (from *præ*, before, and *cor*,  
the heart), that region which lies before the  
heart, and separates it from the intestinal ca-  
vity; the fore part of the thorax. Sometimes  
it signifies the hypochondria. Fernelius com-  
prehends under this term the region above the  
stomach, the diaphragm, the cavity of the liver  
and biliary ducts included therein, the pancreas,  
the stomach in particular, and its upper orifice,  
with whatever is contained under the inflections  
of the spurious ribs, towards the fore parts and  
the sternum. Some have given this name to  
the metatarsus.

PRÆPUTIUM (from *præputio*, to lop off be-  
fore), the prepuce or foreskin. See PENIS.

PRAXIS MEDICA, that part of medicine  
which instructs us how to discover a disease  
when present in the body, or to order the pro-  
per remedies for its removal.

PRECIPITATION, the separating of solid  
bodies, from any fluid menstruum wherein they  
are dissolved, by the addition of a third body,  
which, having a greater affinity with the men-  
struum than that already dissolved, causes that  
solvent to regain its solid form, and to subside  
in the state of a powder. Or precipitation takes  
place if the solvent has a greater affinity with  
the third body added than that with which it is  
already joined.

Precipitation is of two kinds: first, where  
the substance superadded unites with the men-  
struum, and occasions that which was before  
dissolved to be thrown down. Secondly, where  
the substance superadded unites with the dissolv-  
ed body, and falls along with it to the bottom.  
Of the first we have an example in the precipi-  
tation of sulphur from alkaline lixivium by the  
means of acids; of the second, in the precipi-  
tation of mercury from aqua fortis by sea-salt,  
or its acid.

When the matter to be precipitated is all at  
the bottom of the vessel, the fluid being poured  
off or filtered, what remains behind is all to be  
dried in the same manner as levigated powders  
are. These are called PRECIPITATES.

Precipitation may also be effected by drop-  
ping in a liquor specifically lighter than the

menstruum by which the precipitated matter was dissolved. Thus the spirit of sal ammoniac precipitates plentifully the solutions of metals in acid menstrua; the same is effected by rectified spirit of wine, which also precipitates all salts from water. Acids poured upon heavier acids will precipitate whatever swims in them; thus the spirit of salt precipitates lead, copper, and tin, dissolved in vitriolic acid. Precipitation also succeeds if a heavier body be added to the dissolving menstruum: thus acids, or water alone, will carry down all the solid corpuscles which they meet with in tinctures of vegetables extracted by spirit of wine; and the same tinctures extracted by water or wine are precipitated by means of acid spirits.

When a third body is added to any solution for precipitating one part thereof, it produces its effect by uniting with the dissolving liquor, or with the matter which is dissolved; and, as one or the other happens, that which is precipitated is either simple or compound: if the precipitating matter joins with the dissolving liquor, the precipitate is simple; if it unites with the precipitated matter, the precipitate is compound. This should be observed, and the respective precipitates distinguished by the words simple or compound.

Sometimes an advantage may be made of the liquor which remains after the precipitation is performed: thus, when fixed alkaline salt is dissolved in water, and sulphur is dissolved in this lixivium, the addition of acid separates and throws down the sulphur, only in consequence of the acid uniting with and neutralizing the alkali, by which the sulphur was held dissolved; of course, if the precipitation is made with the vitriolic acid, and the acid gradually dropped in till the alkali is completely fatiated, that is, so long as it continues to occasion any precipitation or turbidness, the liquor will yield, by proper evaporation and crystallization, a neutral salt, composed of the vitriolic acid and fixed vegetable alkali, viz. the vitriolated kali: in like manner, if the precipitation is made with the nitrous acid, a true nitre may be recovered from the liquor; if with the marine, the salt called *spiritus salis marini coagulatus*; and if the acid of vinegar, the kali acetatum.

**PREDISPOSING CAUSE**, that cause which produces a disposition to some effect that may or may not take place.

**PREPARATION**, a process in pharmacy, by which simple substances are rendered fit to be exhibited for the cure of diseases. It consists chiefly in a separation of them from the heterogeneous or useless particles with which, in

their natural state, they happen to be combined. This may be illustrated in the preparation of such bodies as will not dissolve in water.

These substances are first pulverised in a mortar, and then levigated with a little water, upon a hard and smooth marble, into an impalpable powder: this is to be dried upon a chalk stone, covered with filtering paper, and afterwards set by for a few days, in a warm, or at least, a very dry place.

After this manner are prepared, verdégris, antimony; chalk; tutty; lapis calaminaris, previously calcined by heating it three times red-hot, and quenching it as often in water, &c.

In preparing antimony, calamine, and tutty, particular care ought to be taken to reduce them into the most subtil powder possible, as the sensibility of the parts to which calamine and tutty are applied requires them to be freed from any irritating particles; and antimony, unless thoroughly comminuted, may not only wound the stomach, but pass off without producing any other sensible effect than an increase of the grosser evacuations, whilst, if reduced to the utmost fineness, it may become a medicine of considerable efficacy, as is well known to veterinarians.

Where large quantities of the foregoing powders are to be prepared, it is customary, instead of the stone and muller, to employ hand-mills made for this use, consisting of two stones, the uppermost of which turns horizontally upon the lower, and has an aperture in the middle: for the conveniency of supplying fresh matter, or of returning that which has already passed, till it is reduced to a proper degree of fineness.

For the levigation of hard bodies, particular care should be taken, whatever kind of instruments is made use of, that they be of sufficient hardness, otherwise they will be abraded by the powders.

The most successful method of obtaining these powders of the requisite tenuity is, to wash off the finer parts by means of water, and continue levigating the remainder till the whole becomes fine enough to remain, for some time, suspended in the fluid. In the Edinburgh Pharmacopœia, this is directed as follows.

A quantity of water is to be poured upon the levigated powder, in a large vessel, and the vessel repeatedly shaken, that the finer parts of the powder may be diffused through the water: the liquor is then to be poured off, and set by till the powder settles. The gross part, which the water would not take up, is to be further levigated, and treated in the same manner.



By this method, which is that commonly practised in the preparations of colours for the painter, powders may be obtained of any required degree of tenuity; and without the least mixture of the gross parts, which are always found to remain in them after long-continued levigation. All the coarser matter settles at first, and the finer powder continues suspended in the water, longer and longer, in proportion to the degree of its fineness. The same process may likewise be advantageously applied to other hard pulverable bodies of the mineral kingdom, or artificial preparations of them, provided they be not soluble in, or specifically lighter than, water. The absorbent powders, as chalk, &c. are not well adapted to this treatment; nor indeed do they require it. These substances are readily soluble in acid juices without much comminution. If no acid be contained in the first passages, they are apt to concreate with the mucous matter usually lodged there into hard indissoluble masses; the greater degree of fineness they are reduced to, the more they are disposed to form such concretions, and enabled to obstruct the orifices of the small vessels.

The preparation of greasy matters, as lard, suet, &c. is a different thing. To do this,

Chop them into small pieces, and melt them by a gentle heat, with the addition of a little water; then strain them from the membranes.

The use of the water is to prevent the fat from burning and turning black; which it does very effectually, though it somewhat prolongs the process, and is likewise apt to be in part imbibed by the fat. The Edinburgh dispensatory directs the fat to be first freed from the skins, blood-vessels, and fibres, then washed in fresh quantities of water till it no longer gives the liquor any bloody tinge, afterwards melted, strained, and kept for use.

Other modes of preparation occur in pharmacy, and these will be noticed in their proper places.

**PRESAGE** (from *præ*, before, and *ſagio*, to perceive), the sign or indication by which the final event of a disease may be foretold (see **PROGNOSTIC**). Hoffman observes, that three things are requisite to a right presage: viz. 1st, That, from due observation, we be able to trace and investigate the origins and causes of disorders, in order to oppose them in the beginning, by proper remedies, or give salutary directions. 2dly, That we accurately know the various natures of diseases, and their differences with respect to different constitutions, that we may be better able to give medicines that are

capable of removing them. 3d, That we be able to form a right judgment of the operation of medicines, and the event of disorders. This last, though it does not directly obtain the end of the healing art, yet it promotes the certainty of medicine, and the reputation of the practitioner.

**PRESCRIBING**, or **PRESCRIPTION**, an art of the utmost importance to every veterinary practitioner; since, without ability in this respect, all his sound theory and well-grounded principles, all his anatomical skill, all his knowledge of the animal economy, can be attended with no beneficial consequences to his patient. Medicines are the weapons with which he is to encounter disease, and defeat or victory may be reasonably expected as he uses them with more or less dexterity. Under the article **VETERINARY SURGEON**, we propose to speak of the general qualifications required in a good practitioner; but we may here, not improperly, advert to those points immediately belonging to the subject under consideration.

1. He ought to be thoroughly acquainted with all the substances employed in the cure of human diseases.

2. He should, by experiment, ascertain their several effects on the horse, and other useful animals, so as to form a materia medica of his own.

3. He should use every means of ascertaining the doses of internal remedies in different diseases.

4. He should possess sufficient chemical knowledge to prevent the too common error of ordering substances to be mixed with each other that are naturally at variance.

5. He should be aware, as well of the co-operating, as of the *corrective*, or counteracting, effects of medicines on each other, and of any peculiar tendency produced by their union in the same formula.

6. He should avoid a multitude of ingredients in his prescriptions, even though all may be presumed to promote the object in view.

7. He should form an accurate judgment of the powers and susceptibility of the patient, and weigh these against the degree of activity which may belong to the medicine he proposes to administer.

Many instances might be produced to shew, that there is great need of precision in all these respects, and that even some of our modern veterinarians have not proved themselves versed in this ultimate and indispensable branch of their art. The old writers on farriery have some excuse for the errors which they adopted, because

they were the errors of the most enlightened physicians of their time; but our candour would be called in question were we to shew the smallest degree of approbation of similar deficiency in modern prescription. We wave, however, the particular cases in which these are apparent, as an invidious task; and merely insert the following instance of a *multi-farious compound*, the author of which, however, has been known to employ it with seeming success in obstinate cases of farcy. The following recipe formed his favourite *arcanum*.

Take of Verdigrise, levigated, four ounces;  
 Acetated litharge, two ounces;  
 Camphor, four ounces;  
 Calomel, half an ounce;  
 Yellow rosin, in powder, half a pound;  
 Vitriolic acid, six ounces;  
 Ethiops mineral, two ounces;  
 Acetated ceruse, four ounces;  
 Soft soap, a sufficient quantity to form the whole into a mass.

Of this potent compound a common-sized ball was given to the horse in the morning, on an empty stomach; and the dose increased, or abridged, according to the effect it seemed to produce on the appetite. The diet consisted of hay and bran-mashes; the water given him was a little warmed; and moderate exercise was used. It is impossible to suppose that *all* these ingredients (some of them opposite in their nature and qualities) *were necessary* to the end in view; but that this medicine *was of service*, in some cases in which it was tried, is an *indisputable fact*.

**PRESENTATION** (from *præsentō*, to offer), in obstetrics, the manner in which a fœtus offers itself in its passage into the world; and the different presentations are denominated according to that part of it which is perceived at the mouth of the womb when the mother begins to be in labour. In a natural labour, the young animal presents with its head. See **OBSTETRICS**.

**PREVENTIVES**, or **PREVENTATIVES**, medicines administered to animals on a presumption that disease would arise in them if these were not employed. The absurd length to which men's imaginations sometimes carry them in pursuing this plan are shewn under the article **MEDICINES**. See also **PROPHYLAXIS**.

**PRIAPISM**, so named from Priapus, the heathen god, whose penis is always painted erect; an erection of the penis without any concomitant pain, or the consent of other parts. It is very commonly seen in the ass.

**PRICKING**, a very common accident which happens to the horse in shoeing. See **PUNCTURE**. It takes place either in consequence of the farrier's rashness, in entering the nail too close to the sensible parts, or of the accidental bending of the nail in an unfavourable direction afterwards. When this happens, the horse soon becomes lame; and it will be necessary, in the first instance, to draw the nail which has occasioned the mischief, and, secondly, to apply such remedies as are likely to abate inflammation in the foot. Instead of this, however, it is too common to treat the part with stimulating oils and tinctures.

**PRIMÆ VIÆ**, the *first passages*, the stomach and intestinal tube; comprehending all that the food comes in contact with after its passage from the mouth. See **STOMACH**, **INTESTINES**, &c.

**PRINCIPIA** (from *princeps*, the first or chief), the principles or elements of bodies. To know the virtues of bodies, or how mixed substances stand related to living animals, either for preserving or for restoring health to them, we must know their principles. Such simple parts as all mixed bodies can be resolved into are called *principles* or *elements*. The number of these has been much reduced by modern chemists. *Chaptal* says, "As soon as chemistry had advanced so far as to discover the principles of bodies, the professors of that science presumed to mark the number, nature, and character of the elements; and every substance that was unalterable by the chemical method of decomposition was considered by them as a simple or elementary principle. By thus taking the limits of analysis as the term for indicating the elements, the number and nature of these must vary according to the revolutions and progress of chemistry. This has accordingly happened, as may be seen by consulting all the authors who have written on this subject from the time of Paracelsus to the present day. But it must be confessed, that it is no small degree of rashness to assume the extent of the power of the artist as a limit for that of the Creator, and to imagine that the state of our acquisitions is a state of perfect knowledge."

The denomination of principles, or elements, ought, therefore, to be effaced from chemical nomenclature; or, at least, it ought not to be used but as an expression denoting the last term of our analytical results; and it is always in this sense that *Chaptal* uses the word.

**PROBANG**, a long flexible piece of whalebone, having sponge fixed to the end. The use of it is, to force down into the stomach



substances which happen to stick in the oesophagus.

**PROBE** (from *probo*, to try), a surgeon's instrument to search wounds and cavities. It may be either of metal or whalebone.

**PROBOSCIS** (προβόσκις), a snout. This is most strictly applied to the trunk of an elephant, but it is used also for the same part in insects and other creatures.

**PROCESS** (from *procedo*, to start out); in chemistry, a series of operations tending to the production of some new fluid or substance. See **CHEMISTRY**.

In anatomy, a process is a protuberance or eminence of a bone, called also *condylus*. Many bones have processes rising out of them. If the process stands out in a roundish ball, it is called *caput*, and the narrow part is called *cervix*; when the head is rather oblong, and unequally rounded, it acquires the name of a *condyle*; a rough unequal protuberance is called a *tuberosity*; such processes as terminate in a sharp point have the name of *corone* or *coronoid*; such as form a longitudinal ridge are called *spina*, and sometimes *crista*; the *labia* are each side of a broad spine; such as form brims of cavities are named *supercilia*. The use of processes is to give bones their necessary shape, and to adapt them for motion; they sometimes serve to give cavities, and generally are useful in allowing a greater surface for the origin, larger attachment, and more advantageous direction of muscles. Processes are of two kinds, viz. the **APOPHYSIS**, and the **EPIPHYSIS**; which see.

**PROCIDENTIA ANI** (from *procido*, to fall down), called also *prolapsus ani* (see **PROLAPSUS**); the falling down of the fundement. It is a relaxation of the sphincter to such a degree that the internal villous or rugous coat of the intestine turns out, making an external swelling. The causes are, weakness in the part, which is aggravated by costiveness, diarrhoea, and particularly a tenesmus; any violent stimulus applied to this part, hard labour, a stone in the bladder, or whatever can occasion a paralysis of the levatores and sphincter ani. The signs are evident to the sight; the inside of the intestine is turned outward; the tumour is of a fleshy colour, sometimes it is wrinkled, at others it is smooth and shining, and is accompanied with an uneasiness, and an ineffectual desire to go to stool. The cure is, in common cases, usually attempted by, first, restoring the prolapsed parts to their natural situation; secondly, by retaining them by mechanical pressure, or the use of astringents; thirdly, by removing the cause, whatever it may be.

**PROCREATION**, the act of an animal begetting or propagating its own likeness by generation. See **GENERATION** and **CONCEPTION**.

**PROFLUVIA**, fluxes attended with fever. In Dr. Cullen's Nosology, it is an order in the class *Pyrexie*.

**PROFLUVIUM**, a flowing; any kind of flux, or liquid evacuation. Thus, a *profluvium alvi*, a flux of the belly, is a diarrhoea or dysentery; *profluvium urinae*, is the diabetes, &c.

**PROFUNDUS MUSCULUS**. See the article **EXTERIOR**, "*Muscles, &c. protuberating under the membrana carnosae, in the left upper limb.*" See also Plate VI.

**PROFUSE STALING**. See **DIABETES**.

**PROFUSIO**, passive hæmorrhage, such as happens from wounds, &c. and not the effect of fever. Dr. Cullen places this genus of disease in the class *Locales*, and order *Apocenses*.

**PROGLOSSIS** (προγλωσσις), the tip of the tongue.

**PROGNOSIS** (from *pro*, before, and *γινωσκω*, to know), a prognostic. It is the foretelling of what may happen to the patient, either with respect to a disease which will occur, and has not yet affected the habit; or of many things in the progress or the termination of the disease, from a thorough acquaintance with previous symptoms. In this Hippocrates excelled: his prognostics are at this day esteemed; yet it must be allowed that some of them are fallacious, from the difference of climes and constitutions. It is material, in forming our prognostics, to attend to, 1. What has resulted from the like disease in other cases; 2. The present state of the vital powers of the patient, and a comparison thereof with the strength of the morbid action. The signs of recovery and death are more fallacious in acute than in chronic diseases.

**PROJECTION** (from *projicio*, to cast forth), in chemistry, the casting any substance, to be calcined, into a crucible, by a spoonful or other small quantity at a time. Projection is also an addition of a small quantity of something to a greater quantity of a metal, in order to ameliorate the metal.

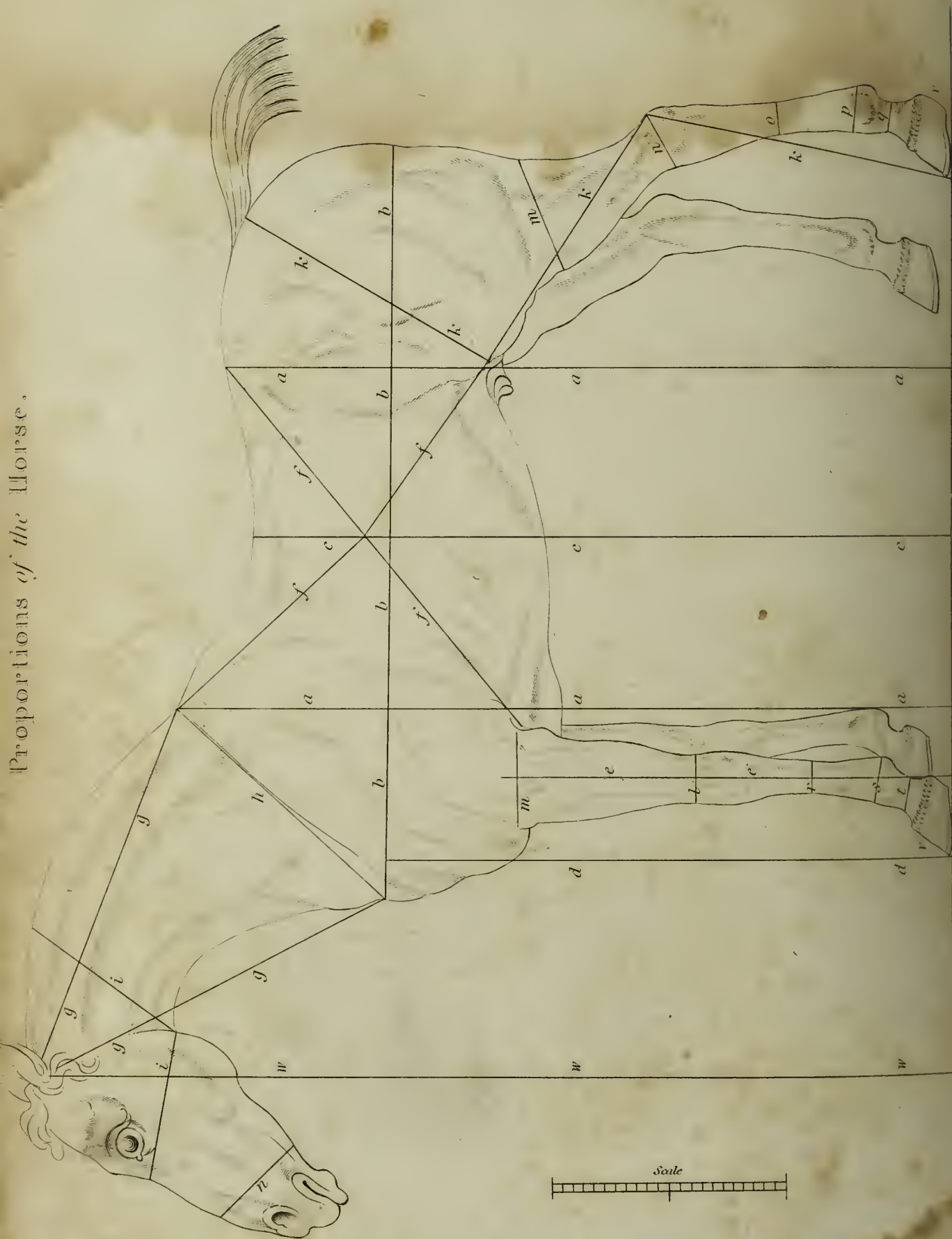
**PROLABIUM** (*pro*, before, *labium*, the lip; also *προχειλα*, from *προ*, before, and *χειλος*, a lip); the red part of the lips. Under the epidermis is a collection of fine long villous papillæ, closely connected together, and covered not only by the epidermis, but also that pellicle which covers the glandulous membrane of the cavity of the mouth. This villous substance is of exquisite sensibility in all animals.

**PROLAPSUS** (from *prolabor*, to slip down),





Proportions of the Horse.



the same as PROCIDENTIA, which see. Cullen places this genus of disease in the Class *Locales*, and order *Ectopice*. A prolapsus, a procidence, or exany, is the lapse of a soft part, so that it is generally obvious to the sight; or it is a tumour arising from the dislocation of a soft part, as a membranous or fleshy part. It is instanced in the bearing down of the rectum, an intestinal hernia, &c. See PROCIDENTIA.

**PROLIFIC** (from *proles*, offspring, and *facio*, to make), something that has the qualities necessary for generating.

**PRONATION** (from *pronus*, upside down). When spoken of a man's hand, it is when the thumb is turned towards the thigh; so that, if the body is laid on its back, the palm of the hand will be downwards. It is the reverse of SUPINATION.

**PRONATOR QUADRATUS**, a muscle also called *transversus* in the human subject. It arises tendinous from the inner part of the ulna, and is inserted into the inner part of the radius. One end of it is fixed to the lower part of the ulna, and by the other in the concave side of the lower extremity of the radius.

**PROPAGATION**, the same as PROCREATION, which see; it was also used by the alchemists, for the increase or growth of metals, as Libavius informs us.

**PROPHYLAXIS** (from *προ*, before, and *εὐλασσω*, to preserve); the method of preserving health, and averting diseases. Medicines used with this view are called *Prophylactics*.

**PROPOLIS** (from *προ*, before, and *πολις*, the city or family; called also *ceranthemus*); Bee-glue, or Bee-bread. It is a wax-like kind of glue, found in the entrance of bee-hives. It has been used topically to soften indurations; but it is not worth notice.

**PROPORTIONS**, the relative magnitudes of the parts of an animal, by which (it is to be presumed) his powers are materially affected. Many authors have supposed it impossible to lay down any general rules of just proportion for the horse; and some have doubted their practical utility, even if it could be done with precision. We are not, however, decidedly of this opinion; at least since we have witnessed the endeavours of some late writers to effect this object. It is certainly true, that, in the noted horse Eclipse, we have a case which seems to set all calculation at nought (see ECLIPSE); yet this is to be considered, though a strong, yet as only an extraordinary exception, and proves merely that the application of any general rule should not be too indiscriminate. Mr. FERON, in his late "*System of Farriery*," notwithstanding Mr. St.

BEL's account of the defective structure of Eclipse, in several particulars, ventures to give the following as "the exact and invariable proportions of the best race horses."

He prefaces his account by observing, that the head of a horse, divided into twenty-two parts, has been the usual scale for measuring every other part of the body; but, if the animal's head should appear either too long or too short, as sometimes is the case, he says, that measure must be abandoned, and instead of it we are to "take the height of the body from the top of the withers to the ground." On the third part of this measure he relies for ascertaining the just length of every other part of the body; and also for shewing how much the head happens to be defective.

We have endeavoured to exhibit Mr. FERON's demonstrations in Plate XXV. where *w, w, w*, shew what the author denominates a well-made horse, and beautiful in his forehead. He measures three heads and sixteen parts, from the top of the head to the ground, provided the head stands in its natural position, which, however, it is not always easy to ascertain.

*g, g*, Shews the neck, which should measure one head and thirteen parts, from the withers to the top of the head. The same measure is given for the length of the neck, from the top of the head to its junction with the chest.

*a, a, a*, Shews the height of the body, which should measure three heads, from the withers to the ground. The same measure holds good from the rump to the ground, which Mr. Feron says, exposes the false idea of making horses appear higher before than behind, when they are to be viewed.

*b, b, b, b*, Shews the length of the body, which should measure three heads and four parts, from the point of the shoulder to the posterior part of the buttock of the animal.

*d, d*, Mr. Feron describes as the line which falls from the articulation of the shoulder with the arm. This, which should measure two heads and seven parts, ought directly to touch the hoof, in front of the toe. "If," says he, "the foot should stand before this line, the leg will be in an oblique direction forward; which structure will confine the horse in all its actions, because the fore-legs are obliged to come upon the ground nearly the same way as those of a horse on the descent (or going down hill), that is to say, the heels will touch the ground first, instead of the toes; but if the legs stand obliquely backwards from above, which is the opposite defect before mentioned, the case is a



deal worse, because the animal is, continually stumbling, and even falling, on account of the feet being drawn too much under the belly, which situation obliges him to support too great a weight of the body. When this defect originates from the knees only, it bends the legs more or less, in which case the horse is called 'Bow-legged.' In either case, such an animal must be rejected, and considered as unfit for the turf."

*l, e, e*, we have the line which falls from the top of the fore-leg to the point of the heel. This line, which should measure one head and twenty parts, is intended to shew the importance of a perfect perpendicular position of the fore-leg.

*f, f*, Is the distance from the top of the withers to the stifle, which ought to measure one head and twenty parts. By the same measure the distance from the rump to the elbow may be determined.

*h*, In width, the neck should measure one head from the top of the withers to the point of the shoulder.

*i, i*, Shews the narrowest part of the neck, and the breadth of the head taken a little below the eyes. The measure given for these is twelve parts of a head each.

In thickness, the body, from the middle of the back to that of the belly, is stated at one head and two parts. *c, c, c*, A continuation of the same line to the ground, shews the animal's centre of gravity.

*k, k*, The distance from the root of the tail to the stifle, should measure one head and four parts. A repetition of these letters shews first, the length from the stifle to the hock; secondly, the distance from the hock to the ground.

By *m*, the breadth of the fore-arm may be ascertained. This, if taken from the anterior parts to the elbow, should measure eleven parts of a head. *m*, In the hinder parts, gives the breadth of one of the legs, taken just under the fold of the buttock.

*n*, Shews the breadth of the hock, taken from its anterior part to the top of the os calcis. This measures seven parts of a head. The same measure (sideway) gives the breadth of the head, above the nostrils.

The forehead, in breadth, taken from one eye to the other, should measure seven parts of a head. The same gives the distance between the fore-legs.

In a well-proportioned horse, the knees, in thickness, should measure five parts of a head; and the same measure gives the breadth of the fore-legs, just above the knees, as at *l*.

*p*, Is the breadth of the hind fetlock joints, which should be four parts of a head.

*t*, The fore-pasterns, which should measure two parts of a head and three-quarters.

*v, v*, The breadth of the coronet. This should measure four and a half parts of a head.

*o*, The breadth of the hinder legs or flank-bones, viz. three parts of a head.

*r*, In breadth, the fore-legs should measure two parts of a head and three-quarters.

*a, a, a*, Is a perpendicular line, which falls from the articulation of the stifle. "This," says Mr. Feron, "should touch the ground at the distance of half a head from the toe. Too far or too near this direction proves the hock defective. If the hind feet advance too much under the belly, the hocks must be proportionably bent, and, the weight of the body overcharging them, will of course increase the deformity. The feet being too much under the belly will render it impossible for them to cover much ground; therefore their steps will be very much confined. The extension of the hocks terminating almost in an upright direction, will rather serve to raise the body than to push it forward.

"If, on the contrary, the hind feet stand too far behind this line, the hocks will be too strait, and their flexion too confined. The extension of the hinder parts taking place, only in a perpendicular direction backward, will produce a defect capable of retarding the speed."

The author is aware of the general opinion, of those who are deemed good judges of horses, that *the hind feet ought never to pass over the fore feet*, but this he thinks erroneous. "Nevertheless," says he, "it is an obvious fact, that the extension of the hind quarters, and the freedom in the action of the hind legs, in a well-bred horse, convey the hind-feet very much beyond the fore-feet; and this I know to be the case with every animal which nature has designed for speed. A bad organization in the structure of the hock, gives also a bad direction to the feet, by turning them inwards or outwards; in either case it is precisely ascertained that the legs lose more or less of their power, because they do not perform their actions upon the line of the body; therefore such mechanism must be considered as a fault in hunters or racers, &c."

Mr. Feron observes here, that a bad organization in the thigh bone, as in case of its inclining outwards, gives a bad direction to all the rest of the limb, by bringing the point of the hocks together, and tending to turning the feet outwards.

"But," says he, "whether the hock bends outwards or inwards, the fault is considerable in either case, for the reason already observed, that the legs cannot move upon the line of the body. The croup will waver to the right and left; of course, a horse of this kind will labour a great deal more than one whose proportion is good: besides, all these lateral motions are absolutely contrary to the actions of a good horse; for which reason I recommend to every one to be very particular in a true and exact proportion in the hind legs, inasmuch as the slightest defect in this part must effectually retard the speed. It is not so bad with regard to the fore-leg, whose function is rather to support the body than push it forwards."

Mr. Feron contends that the foregoing proportions must unavoidably exist in a thoroughbred horse, and that they indeed constitute the most beautiful and important quality of his structure: and any one who gives to the subject the necessary degree of attention, will soon discover those proportions in a horse which indicate superior activity and speed. To render this more easy, the author, after supposing the different organs defective in their proportions, endeavours to point out the consequences resulting from defects in the head, neck, back, loins, chest, &c. These minutæ however can only be effectually understood by consulting the work itself.—(P. 37, *et seq.*)

Mr. St. BEL, in his elaborate Essay on the Proportions of *Eclipse*, preceded Mr. Feron in the plan of calculating the powers of progression. The points in which that celebrated racer differed from the standard of general excellence, may be ascertained by a comparison of the foregoing with Mr. St. Bel's account, where will be found a second Plate, which represents the motions of the legs.

It appears, that the height and length of *Eclipse*, were, from the withers to the ground, 66 inches. His height from the top of the rump to the ground 67 inches. The length of his body, taken from the most prominent part of the breast to the extremity of the buttocks, 69 inches.

The length of the bones which composed his limbs, is stated thus:

<i>Fore Legs.</i>	Inches.
The shoulder blade -	18
The humerus or arm -	12
The cubitus or fore-arm -	16
The canon or shank -	12
The pastern, the coronet, and foot	7

<i>Hind Legs.</i>	Inches.
The os-ilium -	12
The femur -	15
The tibia -	19
The shank or leg -	14
The pastern, the coronet, and foot	9

Mr. St. Bel describes the *extent of flexion* in the several parts which composed the extremities in *Eclipse* thus:

1. *In the Fore Extremities.*

"The shoulder describes the portion of a circle equal to 40 degrees, both forward and backward; the centre of its motion being in the middle of the shoulder blade.

"The humerus, or arm, represented in the centre of flexion backward, describes 40 degrees in its action.

"The cubitus, or fore-arm, taken at the beginning of its flexion forward, describes 90 degrees in its action.

"The shank, or canon, at the commencement of its flexion backward, describes 90 degrees in its action.

"The pastern, coronet, and foot, describe one with another, in their flexion backward, 100 degrees."

2. *In the Hinder Extremities.*

"The haunch, or os ilium, bending upward and downward, describes 30 degrees in its action.

"The femur, or thigh bone, taken in the middle of its flexion forward, describes 50 degrees.

"The tibia, at one third of its flexion backward, describes, in the whole, 80 degrees.

"The shank, in the beginning of its flexion forward, describes 100 degrees.

"The pastern, coronet, and foot, describe, one with another, 100 degrees in their action."

From this statement, Mr. St. Bel shews, "that the legs of *Eclipse*, in their flexion in the gallop, described each a circle of 360 degrees; and, consequently, the extent of the action of each leg was the same in the extension:

"To this," says he, "must be added the force of action, without which an horse cannot even walk. This force depends chiefly on the power of the muscles, and can only be computed by experiment; since they are animated organs, which move parts merely mechanical: but, in allowing *Eclipse* a good muscular organization, which he certainly possessed, we may, examining the length and direction of his legs, and the greatness and openness of the angles, formed by the alternate disposition of the bones which composed his extremities, pronounce with the



greatest probability, that Eclipse, free of all weight, and galloping at liberty in his greatest speed, could cover an extent of 25 feet at each complete action on the gallop; that he could repeat this action twice and one-third in each second; consequently, that, employing without reserve all his natural and mechanical faculties on a straight line, he could run nearly four miles in the space of six minutes and two seconds."

The author shews, by a diagram, six complete actions of the gallop. In these the four prints of the feet of *Eclipse*, which are marked before and behind, shew where he placed his hind and fore feet in the gallop. See the article GALLOP.

The professor's succeeding remarks on the defects observable in the construction of the several parts of this extraordinary animal, are too much in detail to admit even of abridgement, within a moderate compass. The reader of them, however, though he may have his doubts as to the accuracy of this mode of calculating the powers of a living animal, will not fail, at least, to admire the ingenuity of the attempt.

In Plate VI. annexed to the article EXTERIOR, is shewn a horse, unexceptionable in point of form, drawn by the masterly pencil of Mr. STUBBS; and as, in this anatomical figure, nothing is removed but the skin and common integuments, we conceive it unnecessary to follow some of our cotemporaries, who have thought proper to exhibit a plate of the horse merely as a picturesque object.

PROSTATĀ, a suppository.

PROSTATĒ (from *προς*, before, and *ιστημι*, to stand, from *προσισταμαι*, to be adjacent to; so called because it stands near to and before the bladder); the prostate gland. The prostatæ are situated at the neck of the bladder, are shaped like a heart, the lower surface is the largest, and the upper ones are both flat. The membranous part of the urethra runs through it: in the human body it is about the size of a walnut; in large animals of a much greater size. When cut open, the eminence called caput gallinaginis is seen. The vasa deferentia pass through its substance. The symptoms of an inflammation or swelling of this gland are known from the pain and difficulty of making water; besides, if there should be any doubt whence these proceed, an examination by the rectum will clear up all difficulties on that head.

PROTRACTOR, an instrument used by surgeons to draw out any foreign or disagree-

able bodies from a wound or ulcer, in the same manner as by the forceps.

PROTUBERANCE, any elongation, or extension of a part whether natural or not; as the apophysis of a bone, and the like.

PRUNELL, or PRUNELLA, a salt in no respect different from common nitre, other than as it is rendered more agreeable to the eye, and at the same time more costly, by having been melted in a crucible, and cast into the form of white cakes, or balls, in moulds of metal calculated for the purpose.

PRURIGO, or PRURITUS (from *prurio*, to itch); a violent itching, or the itch, called also *scabies*, *psora*, *darta*, &c. Dr. Cullen names this genus of disease *psora*, amongst the order of *Impetigines*; he places it in the class *Locales*, and order *Dialyses*, and defines it pustules, or small pruriginous ulcers, which are contagious. Many anomalous eruptions of the skin in cattle obtain these names for want of being better understood.

PRUSSIATES, are salts formed by the union of the Prussic acid, or colouring matter of Prussian blue, with the different alkaline, earthy, and metallic bases; there are twenty-four species enumerated in M. Fourcroy's Elements of Natural History and Chemistry.

PSEUDES, false, or bastard. Hence the word *ψευδος*, or *pseudo*, with which many names begin; as in *Pseudipecacuanha*, the white or bastard sort of ipecacuanha; *Pseudo-Acacia*, false acacia; *Pseudo-Medicus*, one who pretends to be a physician, who is not really so: and so of many other things.

PSOÆ (*ψοαι*), the names of two pair of muscles in the loins. According to Galen, Pollux, &c. the loins were called *ψοαι*.

PSOAS (*ψοα*), a muscle that arises from the internal side of the transverse processes of the vertebræ of the loins, within the abdomen; and descending upon part of the internal side of the ilium, is inserted into the lower part of the little trochanter.

PSOAS PARVUS, arises fleshy from the inside of the upper vertebræ of the loins; and it has a thin and broad tendon, which embraces the *psos* of the thigh, and which is inserted into the os innominatum; where the os pubis and ilium join together.

PSORA (*ψωρα*), a scab, or tetter, a kind of itch.

PSORIASIS, a species of itch which affects the scrotum in the human subject (from *ψωραω*): the scrotum is also unusually hard in this disease.

PSORICA (*ψωριμα*), medicines good against

scabs, and cutaneous eruptions, particularly the itch.

**PSOROPHTHALMIA** (*ψωροφθαλμία*, from *psora*, *scab*, and *ophthalmos*, *eye*); an itchy or scurfy disorder of the eye-lids, which renders them sore, and sometimes scabby.

**PSYCHOLOGIA** (*ψυχολογία*); any treatise on the soul, as that of Willis de *Anima Brutorum*; from *ψυχή*, *anima*, *the soul*.

**PTARMICA**, the same as *Stermutatories*, medicines which excite sneezing. There is also a herb called *Ptarmica*; it is the common sneeze-wort, or goose-tongue, a species of *Achillea*.

**PTERYGIUM** (*πτερυγιον*, from *πτερον*, *ala*, *a wing*), a term applied to several parts of the body, which have any resemblance to wings; as the *pterygoideus musculus*.

**PTERYGOIDÆUS EXTERNUS**, a muscle which arises from the *ala externa*, and from the neighbouring parts of the *os sphenoides*, and is inserted into the neck of the condyle of the lower jaw, and likewise into the cartilage of the condyle, which cartilage is hollowed, to move upon the tuberosity of the *os temporis*.

**PTERYGOIDÆUS INTERNUS**. It rises from the cavity between the lamellæ of the processus pterygoideus, and is inserted into the inside of the angle of the lower jaw: it lies on the inside of the lower jaw, almost as the masseter does on the inside, being of the same figure with it, only it is smaller and narrower.

**PTERYGOIDÆUS PROCESSUS** (from *πτερυξ*, *a wing*, and *ειδος*, *form*). See *SPHENOIDES*.

**PTISAN**, **PTISANA** (from *πτισσω*, *to decorticate*, *bruise*, or *pound*). Properly it is barley deprived of its hulls; or pounded barley, because formerly the barley was decorticated by pounding, after having steeped it a little in water, and then it was dried. After this pounded barley was ground into meal, it was made into balls by first boiling, and then drying it to a due consistence for this end. *Ptisana* was also made of other kinds of grain; but then to *ptisana* was added the name of the grain from which it was made. A quantity of these *ptisana*s was boiled in from ten to fifteen times their quantity of water, until the meal swelled very much; then they added a little vinegar, a little oil, and a sprinkling of salt. The *ptisana* thus boiled was called *cremor*, the cream or soup of *ptisana*; the broth, gruel, or juice of *ptisana*. Hippocrates to this applies the word *adipson*, because by its glutinousness it prevents or cures thirst.

**PTYALISM** (*Ptyalismus*, from *πτύαλιζω*, *to spit*); a frequent and copious discharge of saliva, at present generally understood to be excited by mercury. See *SALIVATION*.

**PUBES** (from *βουζων*, *the groin*); the private parts of the human species, or the hair that grows upon them. The down also upon plants has this name.

**PUBIS OSSA**, called also *peccen*, *pubes*, or *share-bone*. They are situated in the middle, anterior, and external part of the *os innominatum*. On their superior part is a ridge, which runs on a continued line with another of the *os ilium*: it distinguishes the cavity of the belly from that of the pelvis. Betwixt the pubes and ischium is the foramen magnum ovale, which in the recent subject is filled up with a ligament. The symphysis of the *os pubis* is a composition of two cartilages and one ligament; the two cartilages cover the surface of each bone, and the ligament is betwixt them. For these bones in the horse see Plate V., also the description of bones composing "*The Pelvis*," under the article *BONES*.

**PUDENDA** (from *pudor*, *shame*), a name by which the external parts of generation of the human subject of both sexes are called. Those parts in brutes have different names. In the cow they are called the *BEARING*.

**PUDICA** (from *pudor*, *modesty*), vel **PUDENDA ARTERIA**. It comes out between the pyramidal muscle and the spine of the ischium; it runs downwards between the two ligaments, the one of which comes from the tuberosity of the ischium to the sacrum, and the other from the spine of the ischium to the sacrum, on the inside of the tuberosity: as it goes on, it gives ramifications to the anus, which are called the *external hemorrhoidal*, and then goes to the crura penis. The *pudica communis* in the horse is shewn in Plate XXII. See the description of parts "*In the lower limbs*," under the article *MUSCLES*.

**PUERPERAL** (from *puer*, *a child*, and *pario*, *to bring forth*), the state of a *lying-in woman*.

**PULEGIUM**, *Pennyroyal*. See *PENNYROYAL*.

**PULMONARIA** (from *pulmo*, *the lungs*; so called from its virtues in affections of the lungs). A name for the *muscus pulmonarius*, and for the *hieracium Alpinum*. There is also the *pulmonaria maculosa*, also called *pulmonaria symphytum maculosum*, *sage of Jerusalem*, *Jerusalem cowslip*, and *spotted lungwort*; the *Pulmonaria officinalis* Linn. It is a hairy scabrous plant, with leaves of a



dark brownish green colour on the upper side, and spotted for the most part with white; underneath it is of a paler green; the lower leaves are oval, and set on broad pedicles; those on the stalks are narrower, long-pointed, set alternately without pedicles: the flowers are monopetalous, of a purple or blue colour, and sometimes white, followed each by four seeds inclosed in the cup. It is perennial: it grows wild in many parts of Europe, and flowers in April or May. Their virtues are similar to those of the herb *adanthum nigrum*.

**PULMONARY**, an epithet applied to such parts, or things, as relate to the lungs. Thus the blood-vessels of the lungs are termed *pulmonary*; and so also are the diseases. See LUNGS, BLOOD-VESSELS, CIRCULATION, PERIPNEUMONY, &c.

**PULMONIA** (from *pulmo*, the lungs). See PERIPNEUMONY.

**PULP**, **PULPA** (so called *quòd pulte misura vescebatur*). It is a soft sort of fruit which surrounds the seeds. The apple and pear are familiar examples. Other fruits stewed and beaten into a soft mass, are also called *pulp*.

**PULSATION**, the beating or motion of the pulse. See PULSE.

**PULSE**, **PULSUS** (from *pulso*, to beat); that stroke which is felt on applying the finger to an artery in a living animal. This is occasioned by the reciprocal action of the heart and arteries, the blood being propelled from the left ventricle of the heart into the arteries, so as to be distributed through the whole machine, and in so perceptible a manner, that the distension of the arterial tube can be felt by the finger. But before the time of *Hippocrates*, the pulses were not attended to, and indeed very slightly by him, as there are only one or two places in which he makes mention of them, throughout the whole of his works. *Herophilus* was the first who considered the pulse with accuracy, and wrote elaborate treatises on it. In *Celsus's* time the pulse was very much attended to, and consulted, though he calls it *res fallacissima*. *Galen*, however, wrote most voluminously and laboriously upon this subject, a very good epitome of which

may be seen in *Prosper Alpinus de Præfagienda Vita & Morte*. *Boërhaave*, in his *Institutes*, gives an account of all the ancients knew concerning the pulse in a short compass, which is well explained by his commentator, *Haller*. Long experience, however, has rather confirmed than contradicted the opinion of *Celsus*, as most publications on this subject will sufficiently prove to an accurate observer. For, notwithstanding the multiplicity of pulses which have been enumerated, it is to the different degrees of irritability in constitutions that the variety of pulses is owing, with respect to their being quick or slow; every accident that happens to the body, and every affection in the mind, having an influence on them; so that very little can be determined from them in practice. The hard and the soft pulse are very often owing to a quantity of fat, or of a cellular membrane being situated betwixt the artery and the finger, or from the almost total absence of these in this situation.—The full and the small pulses are owing chiefly to the different diameters of the arteries; and except the quick, the slow, and irregular pulses, there are none of the kinds which are so ingeniously distinguished by authors, but that will, on proper enquiry, be found fallacious.

There are adults, in health, whose pulse exceed not forty strokes in a minute;—others, whilst they are at rest, have a pulse so quick that it may be counted to 120; and during the presence of a fever, the pulse has been observed in some instances to beat 220 times in the same period. We speak here of the human subject, the pulse in brute animals varying considerably in different species.

The indications of the pulse are generally of importance in veterinary as in human medicine; for by that we can judge of the state of the circulating system, the phenomena of diseases, the patient's strength or weakness, &c. The following table is given by the late Dr. George Fordyce; and we apprehend it will answer a very useful purpose in giving a precise meaning to the various epithets applied to the pulsations of the arteries in diseases.

<i>It indicates,</i>	<i>by</i>	<i>It is called</i>
1. The strength of the heart's contraction,	Strength. Weakness.	Strong. Weak.
2. The quantity of blood thrown out at each contraction,	Fulness. Smallness.	Full. Small.
3. The number of contractions,	Frequency. Slowness.	Frequent. Slow.
4. The regularity of its action as to strength, quantity, or frequency,	Regularity. Irregularity. Intermission.	Regular. Irregular. Intermittent.
5. The strength of the action of the arteries,	Hardness. Softness. Redoubling.	Hard. Soft. Redoubling.
6. Their irritability of the vessels,	Trembling. Quickness. Regularity. Slowness.	Tremulous. Quick. Regular. Slow.
7. The medium diameter of the arteries,	Dilatation. Contraction.	Great. Small.
8. The quantity of blood in the vessels,	Oppression. Smallness.	Oppressed. Empty.
9. The contraction of the capillaries,	Obstruction. Freedom.	Obstructed. Free.

This table needs no explanation; though it is in fact no easy matter, in many cases, to make the proper distinctions. In attempting to decide on the state of the pulse, it is of importance too, to know the usual pulsations of the patient when in health; as these differ materially in different subjects. The usual healthy pulse of the horse is about forty strokes in a minute.

**PULVERIZATION** (from *pulvis*, *powder*), the reducing any thing to powder.

**PUNCTA LACHRYMALIA** (from *punctum*, *a point*; *the lachrymal points*. These are two small holes, one on each upper and one on each lower eye-lid, on their inner edge near the internal angles, where may be seen a small eminence. See **EYE**. These orifices are situated opposite to each other. They convey away the tears when they have answered their purpose on the anterior surface of the eye, and carry them into the lachrymal sac, and so into the nose. The latter, however, is wanting in the horse.

**PUNCTUM SALIENS**, the leaping point;

that speck in the egg which is called the *Tredde*, and is observed first to have motion in the formation of the chick.

**PUNCTURE** (from *punctum*, *a point*), a small wound made with a pointed instrument, whose sides do not cut but stretch the flesh as it enters. Hence it is a species of *lacerated wound*. See **WOUND**. An opening made with a lancet, is, however, sometimes called a *puncture*.

**PUPIL OF THE EYE**, à *pupa*, *pupula*, *pupila*, because it represents your image, when looked into, no bigger than the pupilla, a puppet. The choroides is continued on the inside of the transparent cornea of the eye, and forms the iris, but it is perforated in the middle, and so forms the pupil: as the iris contracts or expands, the pupil is larger or less. The use of the pupil is, to transmit the rays of light to the retina.

**PUPILLARIS MEMBRANA** (from *pupilla*). In the human foetus of five, six, and seven months, there is no pupil, but a fine vascular membrane, with large arteries going quite across the part where the pupil is afterwards seen. It cannot be seen without injecting it; nor is it known what becomes of it after the birth. It is also found in brutes.

**PURGATIVES**. See **CATHARTICS**.

**PURGING**, an evacuation procured from the intestines by the exhibition of cathartic substances. This operation is of service to cattle in a variety of complaints, but particularly in inflammations, swellings of the extremities, &c. The present manner of purging horses differs little from that recommended by Gibbon, in his chapter on the "general method of purging horses;" except that the number of articles employed to produce that effect, have been considerably abridged, in consequence of the discovery, that some of them, formerly much relied on, are either wholly incapable of acting at all, or else, act only in an inconsiderable degree, on the horse. See the articles **ALOES**, and **ANALOGY**. Another circumstance, indeed, in which this process has been improved, is, that of restraining the use of aloes, which is now given in such doses as are more consistent, than formerly, with the animal's health and safety, whilst the good effects of purging with this remedy, are not at all diminished. The principles on which we should apply purgative remedies to horses, have been admirably laid down by Mr. CLARK, of Edinburgh, in his "*Treatise on the Prevention of Diseases*," to which work we are indebted for the following remarks. After describing the different functions performed in the alimentary canal, the production and uses of the



chyle, &c. (for which see the article *PRIMÆ VIÆ*), he says:

"The action of purging medicines consists in irritating the sensible fibres of the stomach and intestines, by which means, not only the peristaltic motions of the latter are considerably quickened, but also the secretions of mucous and lymphatic juices, and vapours, which ooze every where into the cavities of the intestines, are increased, together with unusual quantities of pancreatic juice and bile from their several sources; hence it will be obvious, how great a quantity of the soundest humours, or even the chyle that is derived from the food, before it is mixed with the blood, may be carried off by purging medicines, and how much the whole mass of fluids, in general, may be decreased and drawn off.

Since, therefore, purging is occasioned by giving such medicines as are found, by their irritating quality, to stimulate the coats of the stomach and guts, and, at the same time, quicken the peristaltic motion of the latter, so as to cause them to shake or throw off their contents by stool, it would appear, that the different kinds of purging medicines differ only in degrees of strength, and that they operate no otherwise upon the different humours of the body than as they stimulate the first passages more or less, and hence cause a greater or lesser evacuation by stool. So that, by this operation, we only lessen the quantity of the fluids, and clear or scour the first passages from any offending matters that may be lodged there. From hence it may likewise be inferred, that there is no such thing as elective purgation, that is, by giving certain medicines, we drain off this or that particular humour from the body. This may be further illustrated in the following case or example: When a horse, that has swelled legs or greasy heels, gets purging medicines, they do not act immediately on the fluids contained in the legs, by carrying them off only, they act by revulsion, that is, by drawing away the fluids, &c. from the stomach and intestines; those that are in the legs are, at the same time, absorbed or drawn away from the extremities by the absorbent vessels, to supply the want in the former; and hence the swelling in the legs, &c. subsides.

"It is a common phrase, when a horse is any way out of order, to say, that such a horse is *foul in the body*, or that he is full of humours, an expression which can only mean that the horse is in a bad habit of body. As to a horse's being full of humours, the propriety of the expression in this sense cannot be admitted, as

every horse, even in the highest state of health, properly speaking, is full of humours; as every gland in the body, of which there are a considerable number, separates a particular humour, which becomes necessary for a variety of purposes in the animal œconomy. Thus the liver separates the bile, the testicles the semen, and every joint in the body has its glands which separate a particular humour; and so of others. Therefore, the expression or phrase of a horse's being "*full of humours*," in the common acceptance of it, is improper, and betrays a want of knowledge of the animal œconomy."

On the fondness which many persons have of giving their horses purging medicines, without considering whether they require any or not, Mr. Clark quotes Dr. Bracken, who says, "This sort of evacuation seems very much to quadrate with the outward senses, and makes the ignorant part of mankind (whose heads are fuller of humours than their horses) imagine that purging medicines carry off the offending matter in most disorders; never considering the general rule, which ought still to be kept in mind, viz. that, in proportion to any one evacuation being heightened or increased, most or all of the other natural evacuations are proportionably diminished."

"It is a practice with many people," continues Mr. Clark, "to ride their horses very hard before they give them purging medicines, in order, as the phrase is, '*to stir up the humours*,' that, when they are afloat (according to their ideas), they may be carried off by the purging. It has been already observed how exercise operates on the circulation of the blood, by increasing its velocity to a great degree, and hence inclining it to an inflammatory disposition, which, in this case, is the very worst thing that could happen, upon the supposition that the horse is in a bad habit of body; for, purging medicines, when they are given in this state, may occasion inflammation in some of the principal viscera or intestines; or they may bring on a fever, or other disorders, which, if they do not prove mortal, yet they may, as is sometimes found to be the case, occasion those disorders that terminate in blindness, incurable lameness, or in some chronic disorder which may render the horse useless."

"*Riding horses about*, the day after they have swallowed medicines, in order to forward their operating, if continued too long, till the horse is warm, or to produce sweating, ought always to be guarded against, as such treatment not only exposes them to catch cold, but hinders the operation of the medicine in the ordinary way; for

it has been observed that purging medicines sometimes go off by sweat, or by urine, which the ignorant and unskilful are not acquainted with; they, therefore, conclude that, as they see no great discharge of dung, the dose has been too weak, and give another too soon, without allowing a proper interval between them. This at the same time is made considerably stronger than the former, which weakens the horse very much, and a considerable time elapses before he recovers his usual strength."

Our author, in the introductory part of his chapter, having taken notice of the great length of the intestines in the horse, says, "This, together with the horizontal or prone position of the body of a horse, is unfavourable to the operation of purging medicines, which, on that account, remain in the intestines a considerable time before they operate, being from 18 to 28 or 30 hours, according to the state of the bowels at the time, and, in some constitutions, even longer. In these cases, it is not advisable to give any medicines in order to quicken or hasten their operation; walking exercise, but not long continued at a time, together with plenty of warm water, if the horse will drink, is the best and safest means to forward their operation. At the same time, it will be necessary to notice whether the horse stales more than usual, as purging medicines are found sometimes to operate in that way, without any considerable evacuation by dung."

A proper caution in giving purging balls, is, "that the operator should push the ball over the roof of the tongue, and that he be certain of the ball's being swallowed entire, and not broken or thrown out of the mouth. Mistakes of this kind have frequently occurred: when the ball breaks, one-half, perhaps, is only swallowed, the other drops out of the mouth, or it may happen that the whole ball drops out unperceived. In these cases, it is concluded, from the purge not operating in due time, that it has been too weak, and therefore, the next dose is made considerably stronger, and hence a super-purgation ensues, attended with great sickness, loss of strength, and other bad consequences. Therefore, when purging balls are given to horses, the head should be kept up, and care taken that the ball passes down the gullet, which may easily be discovered sliding down from the outside; but, if any doubt remains of its being swallowed, a little water may be given the horse to drink, and one gulp or two will put it out of all doubt."

Mr. Clark next adverts to the common practice of giving purging balls upon an empty sto-

mach. This, he says, in some constitutions, occasions great sickness, faintness, griping, &c. long before they begin to operate. To prevent this, he recommends a mash of bran to be given about an hour or more before the ball, which contributes to the effects of the purge, and causes it to operate in the most gentle and easy manner.

"Another error," continues he, "which many people fall into is, that although a purge operates very well, yet, if the horse is not *very sick* during its operation, they conclude that it will not be of any benefit to him; and they therefore give the next purge made a good deal stronger, in order, as they say, to *stir up the humours*; for they conclude that the sicker a horse is under this operation, the humours are the more stirred up, and the easier carried off by the purge, without considering the danger to which they expose the animal.

"When purging medicines are intended to be given to horses, it is necessary that they should be kept quiet and at rest for some time before, that is, from any very violent exercise; and the same rule should be observed for some days after their operation is over, walking exercise only excepted. It is owing to the want of these, and such-like precautions, already mentioned, that so many accidents happen daily in the purging of horses."

Having proceeded thus far, Mr. Clark next considers that part of the subject which relates to the practice of purging horses, by way of preparing them for running, hunting, &c. "It must be acknowledged," says he, "there is a difficulty in combating a practice which too generally prevails, although there are a number of facts which will serve to demonstrate, that *the purging of horses indiscriminately is not necessary* in order to prepare them for these active exercises. On the contrary, it must, and indeed is, in many cases, exceedingly hurtful, on account of the too frequent repetition of them, together with the too short intervals generally allowed between each purgation.

"It is well known, that horses, by good feeding, regular exercise, &c. may be brought to perform the most active exercises; and that many instances daily occur of horses both running and hunting, without undergoing any previous preparation by purging medicines; and it is likewise well known, that, even when purging medicines are given, still regular exercise is found to be absolutely necessary, in order to habituate the horse to this kind of active labour.

"Post horses likewise furnish a further proof



of what has been advanced. It is well known how they can be brought to travel very long stages, and with great speed, without any preparation, farther than good feeding, and inuring them *by degrees* to this violent labour." Bracken, who understood this subject well, and who was likewise a great sportsman, took great pains, in hopes of exploding this absurdity. He has given it as his opinion, that in most cases, good feeding, regular exercise, &c. will make a horse fit to start for a plate, without the use of many purgative compositions to carry off grease, and mend his wind; for the jockeys, he says, are *too fond of giving purges to horses*, by which they certainly weaken their constitutions, by causing the fibres of the stomach and guts to become lax and flabby. To strengthen this assertion, he mentions the case of a mare of his own, that he had run for six years, having in that time given her only two purges; "neither," says he, "had she an ounce of any kind of medicine during that time, except every morning, and mostly every evening, about the bigness of a pigeon's egg of my cordial ball; and, I fancy, she performed as well as most of her neighbours, for she won eight plates out of nine, and four out of six, every year."

Mr. Clark next speaks of the vulgar opinion of *humours falling down* into this or that particular part of the body, if a horse be not properly purged, &c. before he undertakes any active exercises, such as racing, hunting, &c.

"It may be of use to the young practitioner," he says, "to explain what is meant by the phrase of *humours falling down*; but at the same time, I must inform him, that this phrase is so generally in use, that, when a horse's eyes are affected, the humours are said to fall down into them, although they are situated nearly in the most elevated part of the body. But to explain their falling down to the extremities, I shall take a case that frequently occurs: When a horse, that is in the highest state of health, but too fat and full of juices, &c. and accustomed to stand much at rest, is suddenly put to violent or long-continued exercises, his legs will be apt to swell soon after; they will perhaps continue in that state for some time; they may at last break out in running sores about the heels, and form cracks, &c.; when in this situation, it is said, that the humours have fallen down to the legs. Here a question naturally occurs, Where were these humours before the horse got this severe exercise, and how came they to fall down on *this* occasion only?"

Unless a horse has been *gradually* habituated to exercise previous to his undergoing that

which is violent or long continued, his vessels will be too full of fluids, and these, especially the finer capillaries, from the force and rapidity of the circulation during the exercise, will admit the grosser fluids that do not usually circulate in them. They likewise are liable, in these cases, to be ruptured: hence the fluids they contain escape into the cellular membrane, where they stagnate, and, being then out of the course of circulation, occasion a swelling. "If this happens in the legs," says Mr. Clark, "as they are the most depending parts of the body, *the humours are then said to have fallen down*, the swelling causes a distension of the skin, &c.; the cuticular pores are then enlarged, and admit through them the thinner parts of the fluids to the outward surface of the skin, which, on being exposed to the external air, are then changed in their quality, and acquire, according to circumstances, either a soapy, clammy, or greasy nature, or else a sharp foetid ichorous quality, that erodes the skin, and, by lodging there, form small ulcers.

"It ought always to be remembered, that great evacuations weaken an animal body, and, if they are repeated too frequently, and too close upon one another, without allowing a proper interval between each, or, if they are carried to excess, which is sometimes the case, the weakness in the animal system is thereby increased, the powers of life are quite overcome, and death follows, of course."

The author however would not be understood to mean, that purging medicines are never to be used on these occasions. On the contrary, he expresses himself fully sensible of their good effects, *when judiciously administered*, the horse being at the same time *properly managed during their operation*. "But," says he, "I do not approve of repeating purge after purge, merely because this or that horse is to run or hunt, without first considering whether the animal be fat or lean, or whether he has been kept at hard meat, with proper exercise, or whether he has run a considerable time, or late in the season, at grass; all these, and a number of other circumstances necessary to be attended to, ought to be duly weighed and maturely considered, before any purging medicines are administered; for example, if a horse has run long at grass, and is of a plethoric or full habit of body, evacuations by purging, and diuretic medicines to a certain degree, are necessary, together with length of time, good feeding, and regular exercise, to bring his body into that proper habit to enable him to perform, with freedom, such active exercises. But if a horse is of a lean, low,

or dry habit of body, whether it may proceed from the want of proper food, from fatigue, or any other cause, are we to reduce him still lower by repeated evacuations of any kind? There is such an inconsistency in this practice, that it would not even deserve to be noticed, were it not too much practised every day; for, with some people, it is no matter of consideration with them what state of body a horse may be in, that is, whether he be of a fat, or full, or lean, dry habit of body; still he is said to be full of humours, and which must be purged off before he is fit for hunting or running, &c. Horses, in the latter situation, require only good feeding, and regular exercise, to strengthen and improve their constitutions, which cannot fail of taking place, if the viscera are sound, and the horse otherwise in a healthy state. And, even although a horse should be a little inclined to the full, or what is called the plethoric habit, yet, from the use of diuretic medicines, which are commonly given on these occasions, together with regular airings and proper exercise, good feeding, dressing, &c. he may be brought into that proper habit of body which will enable him to perform the most violent labour with the greatest ease to himself, and without any bad consequences."

After a variety of other arguments calculated to shew, that repeated evacuations, of any kind, are not necessary for horses in training either for the turf or the field, Mr. Clark suggests, that if those horses that are intended for hunting, were only allowed the spring-grass, and taken up about the middle or towards the latter end of June, before the grass becomes too rank, although it may be rather inconvenient to have them in the house at that season, yet the owner would find his account in it. The allowance of oats, he observes, must be but small for some little time, but it might be increased, together with the horse's exercise, as the hunting season approaches. "Running horses might be treated in the same manner, according to the season in which they are to run, allowing both a greater length of time in the habitual practice of these exercises, together with proper feeding, dressing, &c. This treatment, together with the use of those alterative and diuretic medicines, which are usually given on these occasions, would render horses much stronger and fitter for these active exercises, without wearing out their constitutions by the repeated use of purging medicines."

Mr. Clark next adverts to the use of purging, as a remedy in diseases. "The substances," says he, "that are used for purging or emptying

the alimentary canal, may be distinguished into two kinds, the *lenient*, which open the belly gently; and the *drastic*, which purge more briskly. The lenient ought always to be preferred when there appears any unusual commotion in the vascular system, which may easily be known by the quickness of the pulse, &c.; for, although purging medicines increase the motion of the pulse during their operation, yet they afterwards abate or lessen the motion of the blood, by drawing off a considerable quantity of the animal fluids by stool; they likewise clear the intestines of sharp stimulating matters or worms, which occasion an unusual degree of irritation in the system; they likewise may be given with different intentions, as circumstances may require, in small doses, to keep the body open, and prevent an accumulation of feces or dung in the intestines, which happens in diseases. In cases of frequent returns of the gripes or cholera, but not during the fit, lest the guts should then be inflamed, they should therefore be given in the intervals, in order to prevent the return of the complaint.

"But, in cases where it is thought necessary to clear the intestines thoroughly, in strong robust horses, the drastic purges may be given, provided there is no great commotion in the circulation of the blood at the time. Purging medicines are of great service in cases where the intestines appear to be loaded with viscid or thick slime, or when it appears, by long-continued costiveness, that the peristaltic motion of the intestines is in some degree suspended; in gross habits, especially where there is any tendency to swellings in the legs, attended with running sores, &c.; in dropical swellings in any part of the body; in diseases of the head, rheums, or fluxions about the eyes; in rheumatic lameness, when the pains seem to move from one limb to another; in the jaundice; in obstinate coughs, especially when the horse is of a full habit of body; in most cutaneous diseases, or when a number of small pimples or lumps arise on the skin, and suddenly disappear again, or when the lumps discharge a sharp fluid of an ichorous quality; in plethoric or full habits, when the horse is intended for violent or active exercises, as running, hunting, &c.; in cases where it is judged necessary to lessen the general mass of fluids, or to divert them from flowing to any particular place in too great a quantity, as in inflammations of the lungs; in this last case, liquid purges are most proper, as they operate more expeditiously. In very delicate constitutions, rhubarb should constitute the greatest part of their purging me-



dicines ; they are likewise most proper in cases of want of appetite : no doubt there may be other cases where purging medicines may be necessary ; but these must depend on the discretion and judgment of the prescriber.

“ On the other hand, it will be prudent to avoid giving purging medicines during extreme cold weather ; likewise in all feverish complaints, when the pulse beats strong and quick, till such time as these symptoms are considerably abated ; in all cases of extreme weakness, whether arising from fatigue or long-continued diseases ; in all lean dry habits, unless there is reason to apprehend it proceeds from worms ; in cases of very obstinate costiveness, till such time as that complaint is in some degree removed by clysters, soft feeding, &c. ; in cases when a horse labours under any violent acute complaint ; in diarrhoea or looseness. Aloetic purges, or those in which aloes enter into the composition, are to be avoided likewise in severe cholics or griping pains, although liquid purges, that are quicker in their operation, and less irritating, may be given with safety in the intervals, when it is observed that horses are subject to frequent attacks of this complaint.

“ Previous to the giving of purging medicines to horses, especially to those that have been kept on hard meat, it will be prudent to keep them from all violent exercises for some days before the purge is given. If they are fat, and of a full habit, it will be necessary to draw some blood, to lower their feeding, and to give them that which is soft and relaxing, as boiled barley, mashes of bran, malt, &c. When horses are to be purged at grass, no preparation is necessary, farther than in plethoric or full habits, to treat them as above, observing, at the same time, that they be not costive, as this frequently happens although feeding on grass ; in that case, they are to be taken into the stable, and treated as if they had been on hard feeding.

“ In giving purging medicines to horses, it will always be most prudent to begin at first by giving mild lenient purges, in order to find out the strength of the constitution, &c. as very strong robust horses, to appearance, are sometimes easier purged than those of a more delicate make ; and it frequently happens, that the same horse is easier purged at one time than at another, according to the state of the stomach and the intestines at the time the purge is given.

“ Mild purges are therefore much safer at all times, and of more benefit to the constitution, than too strong ones ; for the latter cause too

great an irritation of the stomach and bowels ; whence follow griping pains, great sickness, &c. and sometimes inflammation of the intestines ; they likewise may occasion a superpurgation, by which the bowels are so much weakened, that they never afterwards recover their former tone ; and hence follow loss of appetite, general weaknesses, and, perhaps, an habitual diarrhoea or looseness.”

On the subject of mild purging, it may be proper here to advert to a practice very judiciously used by Mr. Professor COLEMAN, and recommended in his lectures. In the opinion of that gentleman there is no substance in the *Materia Medica* more appropriately used for purging horses, than aloes, and its operation may be reduced to almost any degree of mildness by its administration in *small and repeated doses* : for instance one drachm continued at proper intervals, till its effects begin to take place, but not afterwards.

Almost all the cathartics known to act briskly in the human subject have been supposed capable of purging brutes, and it is not till lately that some of those reputed to be the most violent, such as Jalap, and Colocynth, have lost their reputation as purges for the horse. The prescriptions of some modern writers, particularly Mr. Taplin, shew that these facts were unknown to them ; and we occasionally see recommended purgatives of the mildest class, such as rhubarb, senna, cream of tartar, &c. The neutral salts, however, and castor oil, are not destitute of activity, and are convenient remedies in internal inflammations, and other cases where irritating purgatives would be dangerous. Among our most useful purgatives, is *calomel*. Mr. Clark says, when it is intended to give this preparation of mercury with purging medicines (which is to be done in cases of worms, or as an alterative), it is proper to give the calomel in the evening, and a purging-ball the next morning. In this case, he adds, great care should be taken that the horse be not exposed to cold, nor suffered to drink very cold water, although he may be indulged with plenty of water, milk-warm, mixed with a little oatmeal.

It is unnecessary here to introduce any of the *formulae* commonly resorted to for purging horses, as the prescriptions of the latest writers already appear under the article BALL.

PURGING-SALT (BITTER), a genus of neutral salts in the order of earthy neutral salts. It consists of magnesia alba, and the vitriolic acid.

PURIFICATION, the same as *Depuration*, the making any thing fine, or clearing it from dross, or faeces.

**PURULENT**, what is turned into matter, as in the suppuration of a tumor after inflammation.

**PURCHASE.** See **BUYING**.

**PUS** (from *πυος*, *ἡ πυον*, from *πυθω*, *putrefeo*), *matter*; the matter which appears on the surface of wounds that are healing: also what is met with on opening well-digested abscesses is called *pus*. It is unctuous, yellowish, nearly of the consistence of fresh cream, without any particular smell. It is contended by some late writers that pus is a secretion. See **ABCESS**.

When mucus is detained in the lungs for a time, and then spit up, it often resembles *pus*. To distinguish these rightly, *pus* (or *matter*) must be mixed with water: if it be slightly agitated with a whisk, it is easily diffused, and after standing a few hours, falls to the bottom of the vessel. On the contrary, mucus is with difficulty diffused in water, requiring strong agitation, and then the mixture forms a permanent ropy fluid. When the matter spit up by consumptive patients is agitated in water, it mixes without difficulty, and on standing a short time, a matter falls to the bottom resembling *pus*; while the fluid above remains ropy, resembling the mucus and water.

But there is another experiment which is considered as more conclusive. When any one wishes to ascertain the composition of expectorated matter, let it be dissolved in vitriolic acid, or in caustic alkaline lixivium; and then to both solutions add pure water. If there be a fair precipitation in each, it is certain that some *pus* is present. If in neither a precipitation occurs, it is a sure test that the matter is entirely mucus; and if it cannot be made to dissolve in the alkaline lixivium, there is also reason to believe that it is *pus*.

"Pus," says Mr. RYDING, in his *Veterinary Pathology*, "is, when procured from a healthy fore or abscess, an unctuous, whitish, opaque, equal fluid, perfectly inodorous, much resembling cream, and of a sweetish mild taste. When examined by the microscope, its colour, like that of the blood, seems to depend upon a number of small round globules, nearly resembling those observed in milk, and which appear to swim in a fluid. The thickness of pus seems to depend upon the number of globules; greater quantities being always found in thick laudable pus. Its specific gravity is equal to about that of blood. It sinks very readily in water, and will not unite with it in the cold of the atmosphere. Heat does not coagulate it, but it evaporates to dryness. The difference between

*pus* and mucus is, that mucus is ropy, and has no globules, appearing through the microscope to be flaky; whereas pus, in its healthy state, has no appearance of being ropy. The fluid in which the globules swim, differs from serum, in having no power of coagulating by the addition of sal ammoniac; from chyle, by its globules being larger, and not coagulating by heat; and from milk, by its not coagulating by the addition of rennet. In its healthy state, it is perfectly inactive, but is capable of alteration by disease; so much so, that it is often very acrimonious, and will corrode the parts with which it is in contact."

**PUSTULES**, **PUSTULÆ**, the eruptions of the small-pox, or any similar breaking out.

**PUTREFACTION** (from *putris*, *putrid*, and *fio*, *to become*); a species of fermentation, in which the fixed air of the putrefying subject is separated, and by which a dissolution of the parts is effected, and foetor induced. In order to *putrefaction* taking place, it is necessary that there should be a degree of heat, moisture, and of atmospheric air; but whenever a small portion of matter is become putrid, it easily diffuses itself through a large quantity, like leaven in paste. This is in nothing more manifest than in the animal body, wherein a small portion of putrid matter being absorbed, soon contaminates the whole.

From *putrefaction* it is that the plague, the spotted fever, and other disorders of the like kind, take place. In all these, the strength is diminished, and so is the vital heat. In general, if a recovery is within the power of medicine, the bark, acids, fixed air, warm perspiratives, camphor, &c. are the most powerful antiputrescents, and the most successful means for removing those disorders. It is not certain that brute animals are capable of being morbidly affected by putrid effluvia.

**PUTRID FEVER** (from *putreo*, *to corrupt*); called also *frigeraria*, *febris continua putrida*. Under this general name may be included the *plague*, *spotted* or *petechial* fevers, *pestilential*, *malignant*, *camp*, *jail* fever, &c. The more mild instances are of the typhous kind.

**PUTRID ULCER**, a species of ulcer in the human subject, so called from its connection with a peculiar state of the system. To this kind of ulcer Mr. Bell gives the name of *scorbutic*. See **ULCER**.

**PYLORICA ARTERIA**; a branch of the hepatic artery, which is ramified on the pylorus, and on the cardia, and anastomoses with the *arteria gastrica dextra*.



## P Y R

**PYLORICA VENA**, a branch from the vena portæ ventralis. Sometimes it is only a branch of the gastrica recta: it passes over the pylorus to the short arch of the stomach, where it anastomoses with the coronary vein.

**PYLORUS** (from *πύλη*, a door, and *ὑπὸ*, to guard). The word signifies a *porter*, and thus the Greeks called the right orifice of the stomach. See **STOMACH**. A branch of the hepatic artery and of the vena portæ ventralis, are called the *pyloric* artery and vein.

**PYRAMIDALES MUSCULI** (from *πυρραμῖς*, a pyramid); the *pyramidal-muscles* of the belly, also called *auxiliarii*. They present themselves next to the ascending and descending oblique muscles. They were first discovered by Fallopius. They are situated before the extremities of the recti, arising from the fore part of the os pubis, close to the symphysis. They grow smaller as they proceed: they end in a point, and are lost in the linea alba. Their figure gives them their name. They pull down the linea alba. They were called *auxiliarii*, auxiliary muscles, from a supposition that they are only supplemental to the recti in their action, the order of their fibres in both agreeing; and these being always absent when the recti are continued fleshy to the juncture of the ossa pubis.

**PYRAMIDALIS NASI**, a muscle called *triangularis* and *anterior*. One extremity is inserted in the synarthrosis of the os frontis, and ossa nasi; it runs down the side of the nose, and is again inserted into the cartilage there.

**PYRETHRUM**, *pellitory*. See **PELLITORY**.

**PYREXIÆ** (from *πυρετός*, *febris*), febrile diseases.

**PYRIFORMIS MUSCULUS**, a muscle of the thigh, which receives its name from its figure; it is also called *Iliacus Externus*, from its situation: its beginning is round and fleshy from the inferior and internal part of the os sacrum, where it respects the pelvis of the abdomen, and descending obliquely in the great sinus of the os ilium, above the acute process of the ischium, and joining with the glutæus me-

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dius, it is inserted, by a round tendon, in the superior part of the root of the great trochanter. This moves the os femoris somewhat upwards, and turns it outwards. See **ILIACUS**.

**PYRITES** (from *πῦρ* fire), **FIRE-STONES**. They are so called because they strike fire with steel. They vary much in their appearances, being of different colours, shapes, and internal structure. In most parts they are found near the surface of the earth. They consist chiefly of sulphur, iron, and metallic earth; in some there is a little copper; in the yellow sort there is much sulphur; in the white there is but little. They become powdery, and acquire a vitriolic taste; the rain, when suffered to fall on them, washes away their acid of sulphur, which vessels are placed underneath to receive; and from this the green vitriol or copperas is generally made. *Pyrites* are not used medicinally in substance.

**PYRO-LIGNATES**, are salts formed by the union of the *Pyro-ligneous* acid, as it is called, with the different alkaline, earthy, and metallic bases. There are twenty-four species enumerated in M. Fourcroy's Elements of Natural History and Chemistry.

**PYRO-MUCITES**, are salts formed by the chemical union of the *Pyro-mucous* acid, with the different alkaline, earthy, and metallic bases. There are twenty-four species enumerated in M. Fourcroy's Elements.

**PYRO-TARTARITES**, are salts formed by the chemical union of the *Pyro-tartareous* acid. With the different alkaline, earthy, and metallic bases. There are twenty-four species enumerated in M. Fourcroy's Elements.

**PYROPHORUS** (from *πῦρ*, fire, and *φάω*, I bear), a chemical preparation possessing the property of kindling, on being exposed to the air. It consists of carbon and phosphoric acid.

**PYROTICS**, are medicines that are actually or potentially hot, such as will burn the flesh, and raise an *eschar*; from *πῦρ*, ignis, fire.

**PYXIS** (*πύξις*), is properly a box; and, from its resemblance, the cavity of the hip-bone, or acetabulum, sometimes called *Os Pyxidis*.

Q.

**Q.** PL. QUANTUM PLACET, as much as you please.

**Q. S.** QUANTUM SUFFICIT, as much as sufficeth.

**Q. V.** QUANTUM VIS, as much as you think proper.

**QUACK.** See EMPIRIC.

**QUADRAGEMINI**, are four muscles of the human thigh, the *Pyrisformis*, the two *Gemini*, and the *Quadratus*.

**QUADRANS**: a three-ounce measure was formerly thus named.

**QUADRATI**, four-square muscles. Instances of these in the horse, are shewn in Plates VI. XII. and XXI. and the explanations will appear in the several articles to which the same are annexed.

**QUADRATUS FEMORIS**. This muscle rises from the outside of the tuberosity of the ischium, and is inserted into the line between the trochanter major and minor, serving to rotate the thigh in the human subject.

**QUADRATUS LUMBORUM**, arises from the posterior part of the spine of the ilium, and is inserted into the inside of all the transverse processes of the vertebrae of the loins. This muscle moves the body upon the loins to one side, and both together help the rectus abdominis in bending the body forward.

**QUADRATUS MAXILLÆ INFERIORIS**, a broad membranous muscle, which lies immediately under the skin. It arises from the upper part of the sternum, from the clavicle, and from the acromium. It covers all the neck, and adheres firmly to the lower edge of the lower jaw, and being produced, covers also the lower part of the cheeks. When it acts, it pulls the jaw downwards.

**QUADRATUS RADII**, arises by a broad and fleshy beginning, from the lower and internal part of the ulna; it passes over the ligament that joins the radius to the ulna, and is inserted as broad at its beginning into the external and lower part of the radius.

**QUADRUPEDS**, such animals as walk on

four feet. All quadrupeds have a covering of hair, wool, &c. to defend them from the injuries of the weather. This varies in thickness according to the season of the year and difference of climate: in Russia and the northern countries, their furs are very thick and warm, while the little Spanish lap-dogs, and Barbary cows, have little or no hair at all.

The cutis and cuticula in quadrupeds are constructed much in the same way as the human, only more elastic; immediately under this, there is a very thin cutaneous muscular substance called *panniculus carnosus*, which is common to all quadrupeds, the porcine kind excepted; this principally covers the trunk, serving to shrivel the skin, in order to drive off insects; their tails and heads not being sufficient for this purpose, while their extremities are employed in their support and progression.

It has probably been from observing some muscles of the human body, such as the *platysma-myoides*, *cremaster*, and *frontales*, and the collapsed tunica cellulosa of emaciated subjects, to resemble this thin muscle, that some of the older anatomists reckon such a *panniculus* among the common teguments of the human body. This Carolus Stephanus has well observed in his writings.

Most quadrupeds want clavicles whence their anterior extremities fall upon the chest, so as to make their thorax proportionally narrower than the human. This small distance of the anterior extremities is very necessary for their uniform progression: apes indeed and squirrels, have clavicles, to allow them a more full use of their extremities in climbing; but when they walk on all-fours, they move but indifferently.

While some philosophers have chosen to level man to the rank of quadrupeds, others have attempted to elevate certain of the brute creation to the same class with their reputed lords. The *orang outang* is ranged by Linnaeus as congenerous with man, and some theorists have even considered him as the original stock of the



human race, pretending that he has been the *man of the woods* for many ages before *gardeners* were ever thought of. His claims to humanity are founded on his being able to walk upright occasionally, being furnished with a competent share of muscles requisite for the purpose. The form of his heart, lungs, breast, brains, intestines, are similar to those of men; the *cæcum* has also its *appendix vermiformis*: he can sit upright with great ease; shews more design in his plans than his associates in the forests; and can handle a stick on occasion with tolerable dexterity. His disqualifications are the following: The position of the *foramen magnum occipitis*, which is farther backward than in the human species, and the sockets of his lower jaw, made to receive the *dentes incisores* of the upper, indicate his relationship to the *monkey* breed. He has also *thirteen ribs* on each side; his arms, feet, and toes, are much longer than those of the human species, &c. and although his foot does not so closely resemble a hand as that of the ape, yet the *pollex pedis*, or great toe, is placed at a greater distance from the other toes, which gives it the appearance and uses of a *thumb*. These differences indicate, that, although the *orang* can occasionally act the *biped*, yet he is much better qualified to walk on his fore-feet, and climb trees, than the generality of the modern race of men. But an objection to his claims, still weightier than any of the differences stated above, arises from his want of *speech*. For there is no nation of men, however savage, that is destitute of speech; though individuals, secluded from society, may in time lose that faculty. No instances are known in which a company of ten or twelve men have been without a language; but upwards of thirty of the *orang* species have been found in a herd, without shewing the smallest traces of this faculty. It has been suggested by Rousseau, that they may have lost the power from their neglect of using it; but it is very singular that they alone should lose this power, and not that race of men to whom they are supposed to be so nearly related. This point, however, has been completely decided by the discoveries of professor Camper; who, in a paper in the *Philosophical Transactions*, vol. lxxix. part. i. art. 14. has demonstrated, by an anatomical dissection of the organ of the voice, that articulation is rendered impossible in these animals in consequence of the structure of that organ. From the nature and situation of those parts in the *orang outang* (as well as in the ape and in the monkey), he has proved, that no modulation of the voice resembling human speech can be produced in these creatures; be-

cause the air, passing through the *rima glottidis*, is immediately lost in two ventricles or hollow bags in the neck (which are sometimes united into one), with which all these animals are furnished, and which have a communication with the mouth through the said *rima* or slit, so that the air must return from thence, without any force or melody, within the throat and mouth, in these creatures.

We might go on to trace the approach of other brute animals to the structure of the human subject, but this is rather the province of the naturalist, and would lead us into too wide a field. We shall therefore confine ourselves, in this place, to the anatomical description of the more useful domestic quadrupeds.

*Anatomy of the dog.*—We may first observe of this animal, as indeed of most quadrupeds, that its legs are much shorter in proportion to its trunk than in man, the length of whose steps depends entirely on the length of his inferior extremities: however, to balance this, the trunk of the animal is proportionally longer and smaller, his spine more flexible, by which he is able at each step to bring his posterior extremities nearer to his anterior. His common teguments are much a-kin to those of other quadrupeds, only they allow little or no passage for sweat; but when he is over-heated, the superfluous matter finds an exit by the salivary glands, for he lolls out his tongue and flavers plentifully. We are not, however, to suppose, that because a dog does not sweat, he has no insensible perspiration. That a dog perspires is evident, because one of these animals can trace another by the scent of his footsteps; which could not happen if a large quantity of perspirable matter was not constantly going off.

The pyramidal muscles are wanting, to supply which, the *rectus* is inserted fleshy into the os pubis.

The *omentum* reaches down to the os pubis, which, considering the posture of the animal, we shall find to be a wise provision, since its use is to separate an oily liquor for lubricating the guts and facilitating their peristaltic motion; so in our erect posture the natural gravity of the oil will determine it downward, but in the horizontal position of these creatures, if all the intestines were not covered, there would be no favourable derivation of the fluid to the guts lying in the posterior part of the abdomen, which is the highest; and besides, had the *omentum* reached much farther down in us, it would not only have supplied too great a quantity of oil to the lower part of the abdomen, but we should have been in continual danger of herniæ; and even at present the *omentum* fre-

quently passes down with some of the other viscera, and forms part of those tumors. To these, however, the dog is not subject, as his viscera do not press so much on the rings of the abdominal muscles, and besides are prevented from passing through by a pendulous flap of fat, mentioned hereafter. The inferior and interior lamella of the omentum is fixed to the spleen, fundus of the stomach, pylorus, liver, &c. in the same way as the human; but the superior having no colon to pass over, goes directly to the back bone. This serves to explain the formation of the small omentum in the human body; which is nothing but the large omentum, having lost its fat, passing over the stomach and colon, where it reassumes its pinguedo; so proceeds, and is firmly attached to the liver, spine, &c. The stræ of fat are pretty regularly disposed through it, accompanying the distribution of the blood-vessels to guard them from the pressure of the superincumbent viscera.

This animal's *stomach*, though pretty much resembling the human in its shape, is somewhat differently situated. It lies more longitudinal, as indeed all the other viscera do, to accommodate themselves to the shape of the cavity in which they are contained; that is, its inferior orifice is much farther down with respect to the superior than the human: by this means the gross food has an easier passage into the duodenum. Again, the fundus of the human stomach, when distended, stands almost directly forwards, which is occasioned by the little omentum tying it so close down to the back-bone, &c. at its two orifices; but it not being fixed in that manner in the dog, the fundus remains always posterior: this also answers very well the shape of the different cavities, the distance betwixt the cardia and fundus being greater than that betwixt the two sides. It seems to be much larger in proportion to the bulk of the animal than the human, that it might contain a greater quantity of food at once; which was very necessary, since this animal cannot at any time get its sustenance as men do. The turbillion is not so large, nor is there any coercion for forming the *antrum Willefii*, as in the stomach of man. It is considerably thicker and more muscular than ours, for breaking the cohesion of their food, which they swallow without sufficient chewing. Hence it is evident the force of the stomach is not so great as some would have it, nor its contraction so violent: otherwise that of dogs would be undoubtedly wounded by the sharp bones, &c. they always take down; for the contraction here is still greater than in the human stomach, which is much thinner. The ru-

gæ of the tunica villosa are neither so large, nor situated transversely, as in the human, but go from one orifice to the other: the reason of which difference is, perhaps, that they might be in less danger of being hurt by the hard substances this creature frequently feeds upon; and for the same reason there is not the like coercion at the pylorus.

The *intestines* of this animal are proportionally much shorter than ours; for the food which these creatures mostly use, soon dissolves, and then putrifies: on which account there was no occasion for a long tract of intestines, but on the contrary that it should be quickly thrown out of the body. The same is to be observed of all the carnivorous animals. The muscular coat of the intestines is also thicker and stronger than the human, to protrude the contents quickly and accurately. The *valvule conniventes* are less numerous, and in a longitudinal direction; and the whole tract of the alimentary canal is covered with a slime, which lubricates the intestines, saves them from the acrimony of the excrementitious part, and facilitates its passage.

The *duodenum* differs considerably in its situation from the human. For in man it first mounts from the pylorus upwards, backwards, and to the right side: then passes down by the gall bladder; and, marching over the right kidney and superior part of the psoas muscles, makes a curvature upwards; and passes over the back-bone and vena cava inferior, to the left hypochondrium, where it gets through the omentum, mesentery and mesocolon, to commence the *jejunum*, being firmly tied down all the way, the biliary and pancreatic ducts entering at its most depending part: whereas, in the dog, the duodenum is fixed at the pylorus to the concave surface of the liver, and hangs loose and pendulous with the mesentery backwards into the cavity of the abdomen; then turning up again, is fixed to the back-bone, where it ends in the jejunum; the bile and pancreatic juice are poured into it at the most depending part. Therefore the same intention seems to have been had in view in the formation of this part in both, viz. the giving the chyle, after the secretions of the liver and pancreas are poured into it, a disadvantageous course, that so it might be the more intimately blended with the humours before its entry into the jejunum, where the lacteals are very numerous. And thus, by reason of their different posture, the same design (though by a very different order of the parts) is brought about in both. The other small guts are much the same with ours, only shorter. The great guts are also



shorter and less capacious than in the human body; and we take it for a general rule, that all animals that live on vegetable food, have not only their small guts considerably longer, but also their great guts more capacious, than such creatures as feed on other animals. Hence man, from this form of his intestines, and that of the teeth, seems to have been originally designed for feeding on vegetables chiefly; and still the most of his food, and all his drink, is of that class.

The *appendix vermiformis* justly enough deserves the name of an *intestinum cæcum* in this subject, though in the human body it does not; and it has probably been from the largeness of this part in this and some other animals, that the oldest anatomists came to reckon that small appendicle in man as one of the great guts. On its internal surface we observe a great number of mucous glands. All these throw out slime; their principal office would seem to be the procuring a sufficient quantity of that matter for the purposes above mentioned. Still, however, there seems to be some unknown use for this organ in other animals; for the *appendicula vermiformis* in them is either of great size or of great length. In a rat, it is rather larger than the stomach; in others, as swine, and some of the animals which live on vegetables, it has long convolutions, so that the food must be lodged in it for a long time. Thus, probably, some change takes place in the food, which requires a considerable time to effectuate, and, though unknown to us, may answer very useful purposes to the animal.

The *colon* has no longitudinal ligaments; and consequently this gut is not purged up into different bags or cells as the human: nor does this intestine make any circular turn round the abdomen; but passes directly across it to the top of the os sacrum, where it gets the name of *rectum*.

At the extremity of the *intestinum rectum*, or verge of the anus, there are found two bags or pouches, which contain a most abominable fetid mucus of a yellow colour, for which we know no use, unless it serve to lubricate the strained extremity of the rectum, and defend it against the asperity of the fæces, or to separate some liquor that might otherwise prove hurtful to their bodies. There is nothing analogous to those sacs in the human subject, unless we reckon the mucilaginous glands that are found most frequent and largest about the lower part of the rectum.

The *mesentery* is considerably longer than in the human body; that, in his horizontal situa-

tion, the intestines may rest securely on the soft cushion of the abdominal muscles. The fat is here disposed in the same way, and for the same reason, as in the omentum. The interstices betwixt the fat are filled with a fine membrane. Instead of a great number of glandulæ vagæ to be found in the human mesentery, we find the glands few in number, and those are closely connected together: or there is only one large gland to be observed in the middle of the mesentery of a dog, which, from its imagined resemblance to the pancreas and the name of its discoverer, is called *pancreas Asellii*: but the resemblance, if there is any, depends chiefly on the connection, the structure being entirely different. The reason why this in man is as it were subdivided into many smaller ones, may possibly be, that as the guts of a human body are proportionally much longer than those of this creature, it would have been inconvenient to have gathered all the *lactea primi generis* into one place; whereas, by collecting a few of these vessels into a neighbouring gland, the same effect is procured much more easily. Whether the food in this animal needs less preparation in its passage through these glands, is a matter very much unknown to us; though it is certain that some changes really do take place.

The *pancreas* in man lies across the abdomen, tied down by the peritonæum; but the capacity of this creature's abdomen not allowing of that situation, it is disposed more longitudinally, being tied to the duodenum, which it accompanies for some way. Its duct enters the duodenum about an inch and a half below the ductus communis.

The *spleen* of this animal differs from ours very much, both in figure and situation. It is much more oblong and thin, and lies more according to the length of the abdomen, like the pancreas. Though the spleen of this creature is not firmly tied to the diaphragm (which was necessary in our erect posture to hinder it from falling downwards), yet by the animal's prone position, its posterior parts being rather higher than the anterior, it comes to be always contiguous to this muscle, and is as effectually subjected to an alternate pressure from its action as the human spleen is.

The human *liver* has no fissures or divisions, except that small one betwixt the two *pilæ*, where the large vessels enter; whereas in a dog, and all other creatures that have a large flexion in their spine, as lions, leopards, cats, &c. the liver and lungs are divided into a great many lobes by deep sections, reaching the large blood vessels, which in great motions of the back bone

may easily slide over one another ; and so are in much less danger of being torn or bruised, than if they were formed of one entire piece, as we really see it in horned cattle and such creatures as have the back-bone stiff and less moveable. There is here no *ligamentum latum* connecting the liver to the diaphragm, which in our situation is necessary to keep that viscus in its place : whereas in this creature, it naturally gravitates forwards, and by the horizontal position of the animal, is in no danger of pressing against the vena cava ; the preventing of which is one use generally assigned to this ligament in man. Had the liver of the dog been thus connected to the diaphragm, the respiration must necessarily have suffered ; for, as we shall see afterwards, this muscle is here moveable at the centre as well as at the sides. But in man the liver is fixed to the diaphragm, mostly at its tendinous part ; that is, where the pericardium is fixed to it on the other side : so that it is in no danger of impeding the respiration, being suspended by the mediastinum and bones of the thorax. In consequence of this viscus being divided into so many lobes, it follows, that the hepatic ducts cannot possibly join into one common trunk till they are quite out of the substance of the liver, because a branch comes out from every lobe of the liver ; all of which, by their union, form the hepatic duct : whence we are led to conclude, that the hepato-cystic ducts, mentioned by some authors, do not exist. The gall bladder itself is wanting in several animals, such as the deer, the horse, the ass, &c. ; but in place of it, in such animals the hepatic duct, at its beginning, is widened into a reservoir of considerable size, which may answer the same purpose in them that the gall bladder does in others.

We come next, after having examined the chylipoietic viscera, to those organs that serve for the secretion and excretion of urine. And first of the *kidneys* : which in this animal are situated much in the same way as in the human subject ; but have no fat on their inferior surface, where they face the abdomen, and are of a more globular form than the human. The reason of these differences will easily appear, if you compare their situation and posture in this animal with those in a man, who walks erect. They are placed, in this subject, in the inferior part of the body, so are not liable to the pressure of the viscera, which seems to be the principal cause of the fatness of those organs in us, and perhaps may likewise be the cause of our being more subject to the stone than other animals. Hence there is no need of any cellular substance to ward off this pressure where there

would necessarily be fat collected ; but the superior part of their kidneys is pretty well covered with fat, lest they should suffer any compression from the action of the ribs and spine.

In the internal structure there is still a more considerable difference : for the *papillæ* do not here send out single the several *tubuli uriniferi* ; but being all united, they hang down in form of a loose pendulous flap in the middle of the pelvis, and form a kind of septum medium ; so that a dog has a pelvis formed within the substance of the kidney. The only thing that is properly analogous to a pelvis in man is that sac or dilatation of the ureters formed at the union of the *ductus uriniferi*. The external part of the kidney of a dog somewhat resembles one of the lobes of the kidney of a human foetus : but in a human adult the appearance is very different ; because, in man, from the continual pressure of the surrounding viscera, the lobes, which in the foetus are quite distinct and separated, concrete, but the original cortical substance is still preserved in the internal parts of the kidney. The reason of these particularities may probably be, that the fluids of this animal, as of all those of the carnivorous kind, being much more acrid than those that live on vegetable food, its urine must incline much to an alkalescency, as indeed the smell and taste of that liquor in dogs, cats, leopards, &c. evidently shew, being fetid and pungent, and therefore not convenient to be long retained in the body. For this end it was proper that the secreting organs should have as little impediment as possible by pressure, &c. in the performing their functions ; and for that design, the mechanism of their kidneys seems to be excellently adapted. We have most elegant pictures, in Eustachius, of the kidneys of brutes, delineated as such, with a view to show Vesalius's error in painting and describing them for the human.

The *glandulæ* or *capsule atrabiliarie* are thicker and rounder than the human, for the same reason as the kidneys.

The *ureters* are more muscular than the human, because of the unfavourable passage the urine has through them : they enter the bladder near its fundus.

The *bladder* differs considerably from the human ; and first in its form, which is pretty much pyramidal or pyriform. This shape of the dog's bladder is likewise common to all quadrupeds, except the ape and those of an erect posture. In man it is by no means pyriform, but has a large sac at its posterior and inferior part : this form depends entirely on the



urine gravitating, in our erect posture, to its bottom, which it will endeavour to protrude; but as it cannot yield before, being contiguous to the os pubis, it will naturally stretch out where there is the least resistance, that is, at the posterior and lateral parts; and were it not for this fact, we could not so readily come at the bladder to extract the stone either by the lesser or lateral operation of lithotomy. Most anatomists have delineated this wrong; so much, that we know of none who has justly painted it, excepting Mr. Cowper in his *Myotomia*, and Dr. Hunter. It has certainly been from observing it in brutes and young children, that they have been led into this mistake. The same cause, viz. the gravity of the urine, makes the bladder of a different form in brutes: in their horizontal position the cervix, from which the urethra is continued, is higher than its fundus; the urine must therefore distend and dilate the most depending part by its weight.

As to its *connection*, it is fastened to the abdominal muscles by a process of the peritoneum, and that membrane is extended quite over it; whereas in us, its superior and posterior parts are only covered by it: hence in man alone the high operation of lithotomy can be performed without hazard of opening the cavity of the abdomen. Had the peritoneum been spread over the bladder in its whole extent, the weight of the viscera in our erect posture would have so borne upon it, that they would not have allowed any considerable quantity of urine to be collected there; but we must have been obliged to discharge its contents too frequently to be consistent with the functions of a social life. Whereas, by means of the peritoneum, the urine is now collected in sufficient quantity, the viscera not gravitating this way.

It may be taken for a general rule, that those creatures that feed upon animal food have the bladder more muscular and considerably stronger, and less capacious, than those that live on vegetables, such as horses, cows, swine, &c. whose bladder of urine is perfectly membranous, and very large. This is wisely adapted to the nature of their food; for in these first, as all their juices are more acrid, so in a particular manner their urine becomes exalted; which, as its remora might be of very ill consequence, must necessarily be quickly expelled. This is chiefly effected by its stimulating this viscus more strongly to contract, and so to discharge its contents, though the irritation does not altogether depend upon the stretching, but likewise arises from the quality of the liquor.

Their *spermatic vessels* are within their perito-

neum, which is spread over them, and from which they have a membrane like a mesentery; so they hang loose and pendulous in the abdomen: whereas, in us, they are contained in the cellular part of the peritoneum, which is tensely stretched over them. At their passage out of the lower belly, there appears a plain perforation, or hole; hence the adult quadruped, in this respect, resembles the human foetus. And from observing this in quadrupeds, has arisen the false notion of *hernia* or *rupture* among authors. This opening, which leads down to the testicles, is of no disadvantage to them, but evidently would have been to us; for from the weight of our viscera, and our continually gravitating upon these holes, we must have perpetually laboured under enterocoeles. This they are in no hazard of, since in them this passage is at the highest part of their belly, and, in their horizontal posture, the viscera cannot bear upon it. And, to prevent even the smallest hazard, there is a loose pendulous semilunar flap of fat; which serves two uses, as it both hinders the intestines from getting into the passage, and also the course of the fluids from being stopped in the vessels, which is secured in us by the cellular substance and tense peritoneum. And it may be worth while to observe, that this process remains almost unaltered, even after the animal has been nearly exhausted of fat. There is next a passage quite down into the cavity where the testicles lie. Had the same structure obtained in man, by the constant falling down of the liquor which lubricates the intestines, we should always have laboured under an hydrocele; but their posture secures them from any hazard of this kind: indeed some very fat lap-dogs, that consequently have an overgrown omentum, are sometimes troubled with an epiplocele.

The *scrotum* is shorter and not so pendulous as the human in all the dog-kind that want the *vesicula seminales*, that the seed at each copulation might the sooner be brought from the testes, thus in some measure supplying the place of the *vesicula seminales*; for the course of the seed through the *vasa deferentia* is thus shortened, by placing the fecerning vessels nearer the excretory organs. Perhaps its passage is likewise quickened by the muscular power of the *vasa deferentia*, which is stronger in this creature than in man. The want of *vesicula seminales* at the same time explains the reason why this creature is so tedious in copulation. But why these bodies are absent in the dog kind more than in other animals, is a circumstance we know nothing of.

The structure of the *testicles* is much the same with the human; as are likewise the *corpus pyramidale*, *varicosum*, or *pampiniforme*, and the *epididymis* or excretory vessel of the testicle. The *vasa deferentia* enter the abdomen where the blood-vessels come out; and passing along the upper part of the bladder, are inserted a little below the bulbous part of the urethra.

The preputium has two muscles fixed to it: one that arises from the sphincter ani, and is inserted all along the *penis*; and this is called *retractor præputii*. But the other, whose office is directly contrary to this, is cutaneous; and seems to take its origin from the muscles of the abdomen, or rather to be a production of their tunica carnea. The *corpora cavernosa* rise much in the same way as the human: but these soon terminate; and the rest is supplied by a triangular bone, in the inferior part of which there is a groove excavated for lodging the urethra. There are upon the penis two protuberant bulbous fleshy substances, resembling the glans penis in man, at the back of which are two veins, which, by the *erectores penis* and other parts are compressed in the time of coition; and the circulation being stopped, the blood distends the large cavernous bodies. After the penis is thus swelled, the vagina by its contraction and swelling of its corpus cavernosum, which is considerably greater than in other animals, grips it closely; and so the male is kept in action some time contrary to his will, till time be given for bringing a quantity of seed sufficient to impregnate the female: and thus, by that *orgasmus veneris* of the female organs the want of the *vesicula feminales* is in some measure supplied. But as it would be a very uneasy posture for the dog to support himself solely upon his hinder feet, and for the bitch to support the weight of the dog for so long a time; therefore as soon as the bulbous bodies are sufficiently filled he gets off and turns averse to her. Had, then, the penis been pliable as in other animals, the urethra must of necessity have been compressed by this twisting; and consequently the course of the seed intercepted; but this is wisely provided against by the urethra's being formed in the hollow of the bone. After the emission of the seed, the part turn flaccid, the circulation is restored, and the bulbous parts can be easily extracted.

The *prostate* seems here divided into two, which are proportionally larger than the human, and afford a greater quantity of the usual secretions.

The *uterus* of multiparous animals is little else but a continuation of their vagina, only separated from it by a small ring or valve. From

the *uterus* two long canals mount upon the loins, in which the *fœtus* are lodged: these are divided into different sacs, which are strongly constricted betwixt each *fœtus*; yet those constrictions give way in the time of birth. From these go out the *tubæ Fallopianæ*, so that the ovaria are situated pretty near the kidneys.

We come next to examine the structure of the thorax and its contents. But first it may not be amiss to remark of the *diaphragm* in its natural situation, that it is in general more loose and free than the human; which is owing to its connection with the neighbouring parts in a different manner from ours. The human *diaphragm* is connected to the pericardium; which again, by the intervention of the mediastinum, is tied to the sternum, spine, &c. but here there is some distance between the diaphragm and pericardium. We observe further, that its middle part is much more moveable, and the tendinous parts not so large. And indeed it was necessary their *diaphragm* should be somewhat loose, they making more use of it in difficult respiration than man. This we may observe by the strong heaving of the flanks of a horse or dog when out of breath; which corresponds to the rising of the ribs in us.

The disposition and situation of the *mammæ* vary as they bear one or more young. Those of the uniparous kind have them placed between the posterior extremities, which in them is the highest part of their bodies, whereby their young get at them without the inconvenience of kneeling: nevertheless, when the creatures are of no great size, and their breast large, as in sheep, the young ones are obliged to take this posture. In multiparous animals, they must have a great number of nipples, that their several young ones may have room at the same time, and these disposed over both thorax and abdomen; and the creatures generally lie down when the young are to be suckled, that they may give them the most favourable situation. From this it does not appear to be from any particular fitness of the vessels at certain places for giving a proper nourishment to the child, that the breasts are so placed in women as we find them, but really from that situation being the most convenient both for mother and infant.

The *sternum* is very narrow, and consists of a great number of small bones, moveable every way; which always happens in creatures that have a great mobility in their spine. The ribs are straighter, and by no means so convex as the human; whereby in respiration the motion forward will very little enlarge their thorax, which is compensated by the greater mobility of their



diaphragm : so our thorax is principally enlarged according to its breadth and depth, and theirs according to its length. The want of clavicles, and the consequent falling in of the anterior extremities upon the chest, may contribute somewhat to the straightness of the ribs.

The *mediastinum* in this creature is pretty broad. The pericardium is not here contiguous to the diaphragm, but there is an inch of distance betwixt them, in which place the small lobe of the lungs lodges ; and by this means the liver, &c. of this animal, though continually pressing upon the diaphragm, yet cannot disturb the heart's motion.

The heart is situated with its point almost directly downwards, according to the creature's posture, and is but very little inclined to the left side. Its point is much sharper, and its shape more conoidal, than the human. Here the names of *right* and *left* ventricles are proper enough, though not so in the human ; which ought rather to be called *anterior* and *posterior*, or *superior* and *inferior*. This animal has the *vena cava* of a considerable length within the thorax, having near the whole length of the heart to run over, ere it gets at the *sinus Lowerianus dexter*. In men as soon as it pierces the diaphragm, so soon it enters the pericardium, which is firmly attached to it, and immediately gets into the *sinus Lowerianus* ; which sinus in the human subject, by the oblique situation of the heart, is almost contiguous to the diaphragm : and by this we discover, that several authors have taken their delineations of the human heart from brutes ; which is easily detected by the shape and situation of the heart, and long *vena cava*, within the thorax.

This situation of the heart in a dog agrees best with the shape of its thorax, which is lower than the abdomen. The egress of the large blood-vessels from the heart is somewhat different from the human ; for here the right subclavian comes off first : and as a large trunk runs some way upwards before it gives off the left carotid, and splits into the carotid and subclavian of the right side, then the left subclavian is sent off. So that neither here, properly speaking, is there an *aorta ascendens*, more than in the human ; but this name has probably been imposed upon it from observing this in a cow, where indeed there is an ascending and descending aorta.

From this peculiarity of the distribution of the vessels of the right side, which happens, though not in so great a degree, in the human subject, we may perhaps in some measure account for the general greater strength, readiness, or facility of motion, which is observable

in the right arm. Neither is this difference peculiar to man, but is still more observable in those creatures in whom the same mechanism obtains in a greater degree. Observe a dog at a trot, how he bears forward with his right side ; or look at him when a-scraping up any thing, and you will at once see that he uses his right much oftener than he does his left foot. Something analogous to this may also be observed in horses.

The *thymus* of this creature is proportionally much larger than ours ; whereas the glandula thyroidea is much less, and is divided into two distinct parts, or there are two separate glands ; which is not the case in man. The reason of this difference is unknown, as is likewise the use of the gland itself. It is generally remarked, that these two glands do thus always supply the place of each other ; that is, in such animals as have a large thymus, the glandula thyroidea is smaller, and *vice versa*.

The *thoracic duct* in a dog has no curvature before it enters the subclavian vein, the horizontal position of this animal allowing a favourable enough course to the chyle, so as not to need that turn to force its passage into the blood. It may likewise be observed, that such animals as walk horizontally have the valves of the thoracic duct fewer in number than others. The horse has only a single pair ; while, on the contrary, the ape resembles man in having several valves. Thus the lymph is not only forwarded in its passage, but the weight of the column is diminished. The lungs of this creature are divided into more numerous lobes, and deeper than they are in man, for the same reason as the liver. The left side of the thorax in this animal bears a greater proportion to the right than in man ; the one being nearly as three to two, the other as four to three. In quadrupeds, as well as in man, the lungs are closely applied to the containing parts ; although this has been denied by some.

We look on it as a general rule, that all quadrupeds, that have occasion to gather their food from the ground, are provided with longer necks than man : but as a long neck not only gives the objection of too long a lever to the weight of the head, but also, when the animal is gathering his food, puts the brain in danger of being oppressed with too great a quantity of blood, by the liquor in these arteries having the advantage of a descent, while that in the veins must remount a considerable way contrary to its own gravity ; it was therefore necessary that a part of the length of the neck should be supplied by the length of the *jarus*. Thus we see horses,

cows, &c. who have no occasion for opening their mouths very wide, yet have long jaws. Bull dogs indeed, and such animals as have occasion for very strong jaws, must of necessity have them short; because the longer they are, the resistance to be overcome acts with a longer lever. Another exception to this general rule, is, such animals as are furnished with something analogous to hands to convey their food to their mouths, as cats, apes, &c. The *teeth* of this creature plainly shew it to be of the carnivorous kind; for there are none of them made for grinding its food, but only for tearing and dividing it. It has six remarkably sharp teeth before, and two very long fangs behind; both of which the ruminating animals want. These are evidently calculated for laying very firm hold of substances, and tearing them to pieces; and the vast strength of the muscles inserted into the lower jaw, assists greatly in this action; while the molars have sharp cutting edges, calculated for cutting flesh, and breaking the hardest bones. Even its posterior teeth are not formed with rough broad surfaces as ours are; but are made considerably sharper, and press over one another when the mouth is shut, that so they may take the firmer hold of whatever comes betwixt them.

The *tongue*, in consequence of the length of the jaws, is much longer than ours; and as this creature feeds with his head in a depending posture, the food would always be in danger of falling out of the mouth, were it not for several prominences or papillæ placed mostly at the roof of the tongue, and crooked backward in such a manner as to allow any thing to pass easily down to the jaws, but to hinder its return. By the papillæ also the surface of the tongue is increased, and a stronger impression is made on the sensation of taste. In some animals who feed on living creatures, these tenter-hooks are still more conspicuous; as in several large fishes, where they are almost as large as the teeth in the fore part of their mouth, and nearly as firm and strong.

The *velum pendulum palati* is, in this creature, considerably longer than in man, to prevent the food from getting into his nose; which would happen more frequently in this animal than in man, because of its situation while feeding. In this subject, as in some other quadrupeds, there is no *uvula*; but then the *epiglottis*, when pressed down, covers the whole rima entirely, and naturally continues so: there is therefore a ligament, or rather muscle, that comes from the os hyoides and root of the tongue, that is inserted into that part of the epiglottis where it

is articulated with the cricoid cartilage, which serves to raise it from the rima, though not so strongly but that it may with a small force be clapped down again. It may be asked, however, why the uvula is wanting here, and not in man? This seems to be, that quadrupeds, who swallow their food in a horizontal situation, have no occasion for an uvula, though it is necessary in man on account of his erect posture. In the upper part of the pharynx, behind the cricoid cartilage, there is a pretty large gland to be found, which serves not only for the separation of a mucous liquor to lubricate the food as it passes this way, but also supplies the place of a valve, to hinder the food from regurgitating into the mouth, which it would be apt to do by reason of the descending situation of the creature's head. In man, the muscle of the epiglottis is wanting, its place being supplied by the elasticity of the cartilage.

The *œsophagus* is formed pretty much in the same way as the human. Authors indeed, generally allege, that quadrupeds have their gullet composed of a double row of spiral fibres decussating one another; but this is peculiar to ruminating animals, who have occasion for such a decussation of fibres. The action of these we may easily observe in a cow chewing her cud.

The *nose* is generally longer than in man, and its external passage much narrower. The internal structure is also better adapted for an acute smelling, having a larger convoluted surface on which the *membrana schneideriana* is spread; and this is to be observed in most quadrupeds, who have the ossa spongiosa commonly large, and these two divided into a great number of excessively fine thin lamellæ. The sensibility seems to be increased in proportion to the surface; and this will also be found to take place in all the other senses. The elephant, which has a head pretty large in proportion to its body, has the greatest part of it taken up with the cavity of the nose and frontal sinuses; which last extend almost over the whole head, and leave but a small cavity for the brain. A very nice sense of smelling was not so absolutely necessary for man, who has judgment and experience to direct him in the choice of his food; whereas brutes have only their senses to direct them.

The external *ear* in different quadrupeds is differently framed, but always calculated to the creature's manner of life. In shape it commonly resembles the oblique section of a cone from near the apex to the basis. Hares, and such other animals as are daily exposed to attacks from beasts of prey, have large ears



directed backwards, their eyes warning them of any danger before: rapacious animals, on the other hand, have their ears placed directly forwards, as we see in the lion, cat, &c. The slow hounds, and other animals that are designed to hear most distinctly the sounds coming from below, have their ears hanging downwards; or their ears are flexible, because they move their head for the most part with greater difficulty than man. Man, again, who must equally hear sounds coming from all quarters, but especially such as are sent from about his own height, has his external ear placed in a vertical manner, somewhat turned forward. In short, wherever we see a peculiarity in the make of this organ in any creature, we shall, with very little reflexion, discover this form to be more convenient for that creature than another. The animal also has the power of directing the cone of the ear to the sonorous body without moving the head. There are some differences to be observed in the structure of the internal ear in different animals; but we know so very little of the use of the particular parts of that organ in the human subject, that it is altogether impossible to assign reasons for these variations in other creatures.

All quadrupeds have at the internal canthus of the eye a strong firm membrane with a cartilaginous edge, which may be made to cover some part of the eye; and this is greater or less in different animals as their eyes are more or less exposed to danger in searching after their food. This *membrana nictitans*, as it is called, is not very large in this animal. Cows and horses have it so large as to cover one half of the eye like a curtain, and at the same time transparent enough to allow abundance of the rays of light to pass through it. Fishes have a cuticle always over their eyes, as they are ever in danger in that inconstant element. In this then we may also observe a sort of gradation.

All quadrupeds have a seventh muscle belonging to the eye, called *suspensorius*. It surrounds almost the whole optic nerve, and is fixed into the sclerotic coat as the others are. Its use is to sustain the weight of the globe of the eye, and prevent the optic nerve from being too much stretched, without obliging the four straight muscles to be in a continual contraction, which would be inconvenient; at the same time this muscle may be brought to assist any of the other four, by causing one particular portion of it to act at a time.

The next thing to be remarked is the figure of the *pupil*, which is different in different animals, but always exactly accommodated to the creature's way of life, as well as to the differ-

ent species of objects that are viewed. Man has it circular, for obvious reasons: an ox has it oval, with the longest diameter placed transversely, to take in a larger view of his food: cats, again, have theirs likewise oval, but the longest diameter placed perpendicularly; they can either exclude a bright light altogether, or admit only as much as is necessary. The pupil of different animals varies in width, according as the internal organs of vision are more or less acute. Thus cats and owls, that seek their prey in the night, or in dark places (and consequently must have their eyes so formed as that a few rays of light may make a lively impression on the retina), have their pupils in the day-time contracted into a very narrow space, as a great number of rays would oppress their nice organs; while in the night, or where the light is faint, they open the pupil, and very fully admit the rays. In the same way, when the retina is inflamed, a great number of rays of light would occasion a painful sensation; therefore the pupil is contracted: on the contrary, in dying people, or in a beginning amaurosis, it is generally dilated, as the eyes on such occasions are very difficultly affected, and as it were insensible.

The posterior part of the choroid coat, which is called *tapetum*, is of different colours in different creatures. For oxen, feeding mostly on grass, have this membrane of a green colour, that it may reflect upon the retina all the rays of light which come from objects of that colour, while other rays are absorbed: thus the animal sees its food better than it does other objects. Cats and owls have their tapetum of a whitish colour; and for the same reasons have the pupil very dilatable, and their organs of vision acute. And we shall find, that all animals see more or less distinctly in the dark, according as their tapetum approaches nearer to a white or black colour. Thus dogs, which have it of a greyish colour, distinguish objects better in the night than man, whose tapetum is dark brown; and who, it is believed, sees worst in the dark of any creature: it being originally designed that he should rest from all kinds of employment in the night-time.

We shall now proceed to the *brain*, which we remark in the first place is proportionally much smaller in all quadrupeds than the human; but, as in man, it is divided into cerebrum and cerebellum, and these two parts bear nearly the same proportion to one another as in us. There was no such occasion for so great a quantity of brain in those animals as in man; seeing in them all its energy is employed in their progression, while man has a great waste of spirits

in the exercise of his reason and intellectual faculties. And besides all this, a great bulky brain would be inconvenient to these creatures, in so far as it would add considerably to the weight of the head; which having the advantage of a long lever to act with, would require a much greater force to support it than now it does; for the heads of the greater part of quadrupeds are not nearly so heavy as they would at first sight seem to be, from the *sinus frontalis* being produced a great way upwards to enlarge the organs of smelling.

The pits in the anterior part of their skulls are much more conspicuous than in the human cranium; but the *falx* is not near so large in quadrupeds as in man, as they have little occasion to lie on either side, and the two hemispheres of the brain are in a great measure hindered from jostling against one another in violent motions, by the brain's insinuating itself into those pits. The second process of the *dura mater*, or *tentorium cerebelli super-expansum*, is considerably thicker and stronger in most quadrupeds than in man; especially in such of them as are very swift of foot, as hares and rabbits, and that most when they are old. This membrane is generally ossified, or we find the place of it supplied by a bone, that it may the more effectually keep off the superincumbent brain from the cerebellum in their rapid motions. The olfactory nerves are very large, and justly deserve the name of *processus mamillares*. They are hollow, and consist of a medullary and cineritious substance, and at first sight appear to be the anterior ventricles of the brain produced; but in man they are small, and without any discernible cavity. The reason of this is pretty evident, if we consider how this animal's head is situated. The cortical and medullary parts, as well as the *corpus callosum*, are similar to those parts in man. The *nates* and *testes* deserve this name much better here than in the human body, with respect to each other. They are larger in the quadruped; and hence, we perceive that there is no great reason for ascribing the different operations to any particular size or shape of these parts. They are here also of different colours; the *nates* being of the colour of the cortical, and the *testes* of the medullary substance of the brain; whereas in man they are both of one colour. The reason of these differences, and others of the like nature to be met with, we shall not pretend to determine. The *rete mirabile Galeni*, situated on each side of the *fella turcica*, about which there has been so much dispute, is very remarkable in most quadrupeds. This plexus of vessels

is nothing else than a continuation of the internal carotid arteries, which, entering the skull, divide into a vast number of minute branches running along the side of the *fella turcica*: and, uniting afterwards, are spent on the brain in the common way. Galen seems with justice to suppose, that this plexus of vessels serves for checking the impetuosity of the blood destined for the brain. The structure of the brain differing but very little in different quadrupeds, it is needless to examine it in any other.

*Anatomy of the Cow.*—The next species of quadrupeds we propose to consider is the *ruminant* kind, of which we have an example in a cow; and accordingly shall take the fœtus of the animal *in utero*, that we may first remark some things that are peculiar to it in that state, and afterwards proceed to examine its viscera. However, before we begin our enquiry respecting the fœtus, it may be right to observe, that from the ovarium something essentially necessary for the production of the fœtus is derived, as well as in the human species.

The form of a cow's *uterus* differs from the human in having two pretty large cornua. This is common to it with other brutes; for a bitch has two long *cornua uteri*: but these again differ (as being multiparous and uniparous) in this, that in the bitch's cornua the fœtus are contained; whereas, here there is only part of the secundines, being mostly the alantoids with the included liquor. The muscular fibres of the uterus are more easily discovered; its internal surface has a great number of spongy, oblong, protuberant, glandular bodies fixed to it. These are composed of vessels of the uterus terminating here. In an impregnated uterus, we can easily press out of them a chylous mucilaginous liquor; they are composed of a great many processes or digituli, and deep caverns, answering to as many caverns and processes of the placenta. Their resemblance has occasioned the name of *papille* to be given them; and hence it was that Hippocrates was induced to believe that the fœtus sucked *in utero*. The *papillæ* are found in all the different stages of life, in the various stages of pregnancy, and likewise in the unimpregnated state. It is not easy to determine whether the uterus grows thicker or thinner in the time of gestation. The membranes, it is plain (by the stretching of the parts), must be made thinner; but then it is as evident, that the vessels are at that time enlarged, upon which principally the thickness of any part depends; so that there seems to be as much gained the one way as lost the other.

The *os uteri* is entirely shut up by a glau-



tinuous mucilaginous substance, that is common to the females of all creatures when with young. The first of the proper involucra of the foetus is the *chorion*, a pretty strong firm membrane, on whose external surface are dispersed a great many red fleshy bodies of the same number, size, and structure, with the papillæ, with which they are mutually indented. They are called *cotyledones*, or, more properly, *placentulæ*, since they serve the same use as the placenta in women. The separation of these from the papillæ without any laceration, and our not being able to inject coloured liquors from the vessels of the glands of the uterus into the placentulæ, seem to prove beyond a reply, that there can be here no anastomoses betwixt the vessels. On their coats run a great number of vessels that are sent to the several placentulæ, on the external side next to the uterus; whereas in creatures that have but one placenta, as in the human subject, cats, dogs, &c. the adhesion is somewhat firmer. The placenta are likewise joined to the papillæ in the cornua uteri.

The *allantois* is a fine transparent membrane contiguous to the former. It is not a general involutum of the foetus in the mother, for it covers only a small part of the amnios. It is mostly lodged in the cornua uteri. In mares, bitches, and cats, it furrounds the amnios, being every-where interposed betwixt it and the chorion. In sheep and goats it is the same as in this animal; and in swine and rabbits it covers still less of the amnios. This sac is probably formed by the dilatation of the urachus, which is connected at its other end to the fundus of the bladder, through which it receives its contents; and a great quantity of urine is commonly found in it. The membrane is doubled at the extremity of the canal, to hinder the return of urine back into the bladder. Its vessels are so excessively fine and few, that we cannot force an injected liquor further than the beginning of this coat. This membrane is so far analogous to the cuticula, as not to be liable to corruption, or easily irritated by acrid liquors. The existence of this membrane in women has been very warmly disputed on both sides.

The third proper integument of the foetus is the *amnios*. It is thinner and firmer than the chorion; it has numerous ramifications of the umbilical vessels spread upon it, the lateral branches of which separate a liquor into its cavity. This is the proper liquor of the amnios: which at first is in a small quantity, afterwards increases for some months, then again decreases; and in a cow near her time, the quantity of this liquor is not above a pound. This membrane

does not enter the *cornua uteri* in this creature, being confined to the body of the uterus; whereas the allantois occupies chiefly its cornua. But for what further relates to the structure of the involucra, with the nature of the liquors contained in them, we must refer to vol. ii. of the Medical Essays.

There are here two *venæ umbilicales*, and but one in the human subject; because the extreme branches coming from the several placentulæ could not unite so soon as they would have done had they come all from one cake as in the human. There is a small round fleshy body that swims in the urine of this creature, mares, &c. which is the *hippomanes* of the ancients. Several idle opinions and whims have been entertained as to its use: but that seems to be still unknown, or how it is generated or nourished, for it has no connection with the foetus or placentulæ.

Having thus considered the several involucra of this animal in a foetal state, let us next observe the specialities in its internal structure peculiar to a foetus. The *umbilical vein* joins the *vena portarum* in the *capsula Glissoniana*, without sending off any branches as it does in the human subject. This vein soon after birth turns to a ligament; yet there are some instances where it has remained pervious for several years after birth, and occasioned a hæmorrhage. We may next observe the duct called *canalis venosus*, going straight from the *capsula Glissoniana* to the *vena cava*: this turns also afterwards to a ligament. The umbilical arteries rise at acute angles from the internal iliacs, whatever some may say to the contrary; these also become impervious.

The pulmonary artery coming from the right ventricle of the heart divides into two; the largest, called *canalis arteriosus*, opens into the descending aorta; the other divides into two, to serve the lungs on each side. The *foramen ovale* is placed in the partition betwixt the right and left auricles. At the edge of the hole is fixed a membrane, which when much stretched will cover it all over; but more easily yields to a force that acts from the right auricle to the left, than from the left to the right. After what has been said, we may easily understand how the circulation is performed in a foetus. The blood, being brought from the placenta of the mother, is thrown into the *capsula Glissoniana*, where it is intimately blended with the blood in the *vena portarum*: then part of this blood goes directly into the *vena cava* by the *ductus venosus*; the rest passes through the liver. First, then, the whole is sent from the *vena cava* into the right auricle, from whence part of it is

sent by the *foramen ovale* into the left auricle ; the rest passes into the right ventricle, then into the pulmonary artery ; then the greatest share it receives is sent immediately into the descending aorta by the *canalis arteriosus*, and the remainder circulates through the lungs, and is sent back by the pulmonary veins into the left auricle ; which, with the blood brought there by the *foramen ovale*, is sent into the left ventricle, from whence it is driven by the aorta through the body. The great design of this mechanism is, that the whole mass of blood might not pass through the collapsed lungs of the foetus ; but that part of it might pass through the *foramen ovale* and *canalis arteriosus*, without circulating at all through the lungs.

The *kidneys* in the foetus are composed of different lobes, which serve to give us an idea of the kidneys being a congeries of different glands ; these lobes being kept contiguous by the external membrane, are pressed by the other viscera, till at length they unite.

We come now to consider the creature as a ruminant animal. There are no *dentes incisores* in the upper jaw, but the gums are pretty hard, and the tongue rough. This roughness is occasioned by long sharp-pointed papillæ with which the whole substance of it is covered. These papillæ are turned towards the throat ; so that by their means the food, having once got into the mouth, is not easily pulled back. The animals therefore supply the defect of teeth by wrapping their tongue round a tuft of grass ; and so, pressing it against the upper jaw, keep it stretched, and cut it with the teeth of the under jaw ; then, without chewing, throw it down into the œsophagus, which in these creatures consists of a double row of spiral fibres decussating one another. All animals which ruminate must have more ventricles than one : some have two, some three ; our present subject has no less than four. The food is carried directly down into the first, which lies upon the left side, and is the largest of all ; it is called *γαστήρ*, *ventriculus*, and *κωλία*, by way of eminence. It is what is called by the general name of *paunch* by the vulgar. There are no rugæ upon its internal surface ; but instead of these there are a vast number of small blunt-pointed processes, by which the whole has a general roughness, and the surface is extended to several times the size of the paunch itself. The food, by the force of its muscular coat, and the liquors poured in here, is sufficiently macerated ; after which it is forced up hence by the œsophagus into the mouth, and there it is made very small by mastication ; this is what is properly called

*chewing the cud*, or *rumination* ; for which purpose the *dentes molares* are exceedingly well fitted : for instead of being covered with a thin crust, the enamel on them consists of perpendicular plates, between which the bone is bare, and constantly wearing faster than the enamel, so that the tooth remains good to extreme old age ; and by means of these teeth the rumination is carried on for a long time without any danger of spoiling them. After rumination, the food is sent down by the gullet into the second stomach ; for the œsophagus opens indifferently into both. It ends exactly where the two stomachs meet ; and there is a smooth gutter with rising edges, which leads into the second stomach, from thence to the third, and also to the fourth : however, the creature has a power to direct it into which it will. Some tell us, that the drink goes into the second ; but that might be easily determined by making them drink before slaughter. The second stomach, which is the anterior and smaller, is called *κεκρυφαλος*, *reticulum*, *honeycomb*, the *bonnet*, or *king's hood*. It consists of a great number of cells on its internal surface, of a regular pentagonal figure, like to a honeycomb. Here the food is further macerated ; from which it is protruded into the third, called *εχινος* or *omasum*, *vulgo* the *manyplics*, because the internal surface rises up into a great many plicæ or folds, and *stratum super stratum*, according to the length of this stomach. Some of these plicæ are further produced into the stomach than others, *i. e.* first two long ones on each side, and within these, two shorter in the middle, &c. There are numberless glandular grains like millet-seeds dispersed on its plicæ, from which some authors call this stomach the *millet*. From this it passes into the fourth, whose names are *κνύστρον*, *abomasum*, *caillè*, or the *red*, which is the name it commonly has because of its colour. This much resembles the human stomach, or that of a dog ; only the inner folds or plicæ are longer and looser : and it may also be observed, that in all animals there is only one digestive stomach ; and that has the same coagulating power in the foetus as the fourth stomach in this animal, whence this might not improperly be called the only true stomach. *Caillè* signifies *curdled* ; and hence the French have given that as a name to this fourth stomach, because any milk that is taken down by young calves is there curdled. It is this fourth stomach, with the milk curdled in it, that is commonly taken for making runnet : but after the bile and pancreatic juice enter, this coagulation is not to be found, which shews the use of these liquors. There are other creatures which use the same



food, that have not such a mechanism in their digestive organs. Horses, asses, &c. have but one stomach, where grass is macerated, and a liquor for their nourishment extracted, and the remainder sent out by the anus very little altered. From this different structure of the stomach in these creatures, a ruminant animal will be served with one-third less food than another of equal bulk: graziers are sufficiently acquainted with this. The reason is, that ruminating animals have many and strong digestive organs; all their food is fully prepared, and almost wholly converted into chyle: but a horse's stomach is not fitted for this; so that he requires a much greater quantity of food to extract the same nourishment.

The intestines of these creatures are of a considerable length in proportion to the bulk of the body; and this confirms what we said formerly on the subject of the intestines of a dog, viz. that the length and capacity of the guts were different in different animals, according to the nature of their food.

The *duodenum* is formed here much the same way as in a dog, and the general intention kept in view with regard to the mixture of the bile and pancreatic lymph. The great guts here hardly deserve that name, their diameter differing very little from that of the small ones; but to compensate this, they are much longer proportionally than a dog's are, being convoluted as the small guts are. The cœcum is very large and long. The digestion of the cow, as well as some other animals, is accompanied with a peculiar kind of action called *rumination*; the intention of which seems to be, that the food may be sufficiently comminuted, and thus more fully acted upon by the stomach: for it is not observed that a calf ruminates as long as it is fed only upon milk, though the action takes place as soon as it begins to eat solid food. But it is to be observed, that so long as a calf feeds only upon milk, the food descends immediately into the fourth stomach (which, as has been already mentioned, seems only capable of performing the operation of digestion) without stopping in any of the first three. The rumination does not take place till after the animal has eaten a pretty large quantity; after which he lies down, if he can do it conveniently, and begins to chew; though the operation will take place in a standing posture, if he cannot lie down. In this action a ball is observed to rise from the stomach with great velocity, almost as if shot from a musket. This ball the animal chews very accurately, and then swallows it again, and so on alternately, till all the food

he has eaten has undergone this operation. This is easily explained from the structure of the œsophagus, which has one set of fibres calculated for bringing up the grass, and another for taking it down. By means of rumination, the cow extracts a much larger proportion of nourishment from her food than those animals which do not ruminate; and hence she is contented with much worse fare, and smaller quantities of it, than a horse; hence also the dung of cows, being much more exhausted of its fine parts than horse-dung, proves much inferior to it as a manure.

The *spleen* differs not much either in figure or situation from that of a dog; but it is a little more firmly fixed to the diaphragm, there not being here so much danger of this viscus being hurt in the flexions of the spine.

The *liver* is not split into so many lobes in this creature as either in a man or dog; which depends on the small motion this creature enjoys in its spine, which made such a division needless. A horse has the liver divided into seven lobes.

The *vesica urinaria* is of a pyramidal shape. It is very large, and more membranaceous: for the urine of these creatures not being so acrid as that of carnivorous animals, there was no such occasion for expelling it so soon.

The bull is provided with a loose pendulous *scrotum*, and consequently with *vesicula seminales*. The female organs differ from those of a bitch, mostly as to the form of the cornua uteri, which are here contorted in form of a snail. In cows, and all uniparous animals, they contain only part of the secundines; but in bitches and other multiparous animals, they run straight up in the abdomen, and contain the fœtus themselves.

The situation of the *heart* is pretty much the same with that of a dog, only its point is rather sharper. In man, the heart beating continually against the ribs, and both ventricles going equally far down to the constitution of the apex, it is very obtuse: but here the apex is made up only of the left ventricle, so is more acute. The *aorta* in this creature is justly divided into *ascending* and *descending*, though this division is ill founded either in a dog or man; and it has certainly been from this subject that the older anatomists took their descriptions when they made this division; for here the aorta divides into two, the ascending and descending.

The diseases of useful quadrupeds form the business of the modern veterinarian and the object of the present work. Those of the horse have principally occupied our attention, though we have by no means neglected to avail our-

selves of the little which has been satisfactorily stated concerning the maladies of other brute animals, as may be known by referring to the several heads under which they may be expected to fall. To what has been said on the complaints to which cows are subject, the following remarks of Mr. FERON may prove a useful addition.

"The most predominant contagious disorder," says he, "which cows are subject to, may be properly called catarrhus; because it first affects the head and wind-pipe. The infection seems to be disseminated amongst these animals by miasmata diffused over their wide nostrils and large maxillary and frontal cavities; and to this circumstance may be ascribed the fatality of it to these animals. The lungs being first affected, the contagious matter, thus received by respiration, somewhat resembles in its effects the acid vapours from burning sulphur, &c., which, if they do not instantly destroy, produce a fever. In the beginning strong symptoms of inflammation are evident, but which, if not immediately removed by proper treatment, are very soon changed into the most extreme arterial debility; a partial emphysema (or swelling from air) takes place, which evinces a considerable disposition to gangrene beneath the skin.

"The most rational method of cure will be to draw blood, by a large orifice, upon the very first appearance of the attack, and this in the quantity of four or five quarts at once, which must be repeated if necessity requires. Let two rowels be opened immediately, one between the lower jaws, and the other under the chest, a little behind the fore-legs. These rowels must be dressed the first time with tincture of cantharides, or blistering ointment, or oil of turpentine; but the former two are preferable. The internal treatment consists in giving half a drachm of opium, and one ounce of oak-bark, every six hours, made into a ball, or dissolved in water-gruel, or what is better in warm ale. The animal must be fed upon barley or oats ground, to the quantity of two quarts, twice a day, mixed with warm water; and must be kept in a warm stable, if the weather is cold, taking care at the same time to have a free circulation of air."

But a more dreadful *pestilential disorder* than this, amongst cows, is one which commences its attack with a considerable degree of general inflammation. "This," says Mr. Feron, "is carried to such an excess, that, on the first day of the attack, cows give nothing but a watery liquid, instead of milk, and about the second

and third day of the disorder, this watery liquor becomes completely bloody. This change in the lactiferous vessels shews the influence of the contagion in the system; and from this it would appear, that the alimentary canal is first affected: the eyes and tongue become considerably inflamed and swelled, attended with a bleeding of the nose, which continues until mortification of the viscera of the chest and lower belly takes place, after which death soon terminates the scene."

With regard to the fatal nature of this epizootic disorder amongst oxen, cows, &c. Mr. Feron very naturally and justly observes, that when the origin of the disease cannot be ascertained, the cure of course becomes a matter of great difficulty. On this account, he advises the person entrusted to superintend the disorder to be not only accurately nice in the discrimination of the contagion; but also to attend minutely to circumstances, and endeavour to develop the mysterious indications of nature in this extraordinary malady.

"To become the more adequate to this task," says he, "the practitioner should be anxiously careful to improve his judgment, and adapt the known qualities of medicines to the expectation of their effects. It will therefore prove highly necessary to attend particularly to the symptoms above described, and proceed accordingly. As soon as ever the first attack is perceived, proper methods should be instantly taken to relieve nature from the threatened oppression, by such evacuations as the predominant symptoms direct.

"The most rational method of cure will be to draw blood, as before described, by a large orifice, upon the very first appearance of the disorder, and this in a large quantity, not less than three or four quarts the first time, which must be repeated as often as necessity may seem to require, which in all probability will be at least twice in the first twenty-four hours. In this recent state of the disorder, I have also found, during my practice, that it was highly beneficial to introduce two rowels, the first between the lower jaw, the second a little behind the fore-legs, or under the belly, which are the nearest places to the seat of the complaint: these local insertions will contribute to unload the neighbouring vessels. It is also an excellent method to dress the rowels, the first time, with tincture of cantharides, or blistering ointment, so as to bring on considerable external inflammation; and likewise to stimulate with oil of turpentine, especially the legs and feet. Should any swellings appear on any part



of the body, they should be brought to sup-  
puration as speedily as possible, by the appli-  
cation of strong blisters."

During the inflammatory state, or in the  
commencement of the disorder, Mr. Feron re-  
commends the following :

Take of Opium,  
Calomel,  
Camphor, of each half a drachm ;  
Tartarised antimony, ten grains.

Make these into a small ball, and repeat it  
every six or eight hours.

The author advises us, in case there be any  
tendency to bloody urine, after the inflammatory  
state is past, to give half a drachm of vitriolated  
copper, and a drachm of prepared rust of iron,  
made up into a ball. But the steam, above all,  
is recommended, particularly where there is  
difficulty of breathing.

QUALITY, signifies, in general, the prop-  
erties or affections of any being, whereby it  
acquires some particular denomination. Those  
which are cognizable by the senses, as figure,  
solidity, &c. are called *sensible qualities*. This  
term has, by many writers, served for a cover only  
of their ignorance, when joined with the term  
*occult*, or any such unintelligible adjunct. The  
quality of a body is said to be vitiated, when  
any sensible disposition of it is impaired or hurt ;  
though this phrase is principally used with re-  
gard to colour and smell.

QUANTITY OF MATTER, in any body,  
is its measure arising from the joint considera-  
tion of its magnitude and density : as if a body  
be twice as dense, and take up twice as much  
space as another, it will be four times as great.  
And this *quantity of matter* is best discoverable  
by the absolute weight of bodies.

QUANTITY OF MOTION, in any body,  
is its measure arising from the joint considera-  
tion of the quantity of matter, and the velocity  
of motion of that body : for the motion of any  
whole is the sum or aggregate of the motion in  
all the several parts. And though in a body  
twice as great as another, moved with an equal  
velocity, it will be double ; yet, if the velocity  
be double also, the *quantity of the motion* will be  
quadruple.

QUARTAN FEVER, an ague or inter-  
mittent of a particular type. When regular, in  
the human subject, it has two fits in four days,  
or the patient is two days free from the fit.  
Thus, on the first and the fourth the fever at-  
tends, and on the second and third it is free :  
the accession of the fit is in the afternoon. Dr.  
Cullen places this genus of disease in the class

*Pyrexia*, and order *Febres*. It is usually both  
more violent and obstinate than a tertian.  
Sometimes a quartan fever is double, that is,  
when the fits come on every other time at  
different hours, and so that the third day only  
is free from fever. It is called *spurious*, when  
the fit begins at any other time of the day than  
about four or five o'clock in the evening. The  
fits return with greater regularity generally than  
is observed in other species of fevers.

QUARTARIUS, a measure which contains  
about four ounces.

QUARTATION; an operation in chemistry  
by which the quantity of one thing is made  
equal to a fourth part of the quantity of another  
thing. Thus when gold alloyed with silver, is  
to be parted, they are obliged to facilitate the  
action of the aqua fortis, by reducing the  
quantity of the former of these metals to one  
fourth part of the whole mass, which is done by  
sufficiently increasing the quantity of the silver,  
if it be necessary.

QUARTERS OF A SADDLE ; the pieces of  
leather made fast to the lower part of the sides  
of the saddle, and hanging down below the  
saddle.

QUARTERS, i. e. the FORE-QUARTERS and  
HIND-QUARTERS of a horse. The fore-quarters  
are the shoulders and the fore-legs : the hind-  
quarters are the hips and the legs behind.

QUARTERS OF A HORSE'S FOOT ; the sides  
of the coffin, comprehended between the toe  
and the heel on one side and the other of the  
foot. The inner-quarters are those opposite to  
one another, facing from one foot to the other ;  
these are always weaker than the outside  
quarters, which lie on the external sides of the  
coffin. A horse is said to have a *false quarter*  
when the hoof has a kind of cleft occasioned by  
a horse's casting his quarter, and getting a new  
one, for then the horn becomes uneven and  
also softer than the rest of the hoof ; and the  
foot should be shod with some nicety. But if the  
cleft be considerable, and take up a fourth of the  
hoof, the horse is worth little.

QUARTER-CAST. A horse is said to  
*cast his quarters*, when, for any disorder in his  
coffin, they are obliged to cut one of the  
quarters off the hoof ; and when the hoof is  
thus cut, it grows and comes on anew.

QUARTZ ; a hard vitrifiable stone called  
also *quartzose stone*. It is found both with ores  
and without them. According to Cronstedt, it  
always forms hexagonal prisms, pointed at one  
or both ends when there has been no inter-  
ruption to its crystallization ; and this crystal-  
lized quartz is rock crystal, which, like the

uncrystallized quartz, is colourless or coloured, transparent or opaque.

**QUASSIA**, a wood so called from a negro, who was named *Quassi*. He lived at Surinam, and used it medicinally. He had great success by giving it in fevers of the malignant, intermittent, and putrid kinds. It is the *Quassia amara* of Linnæus. The wood has no smell, is a very strong bitter, and quite void of stipticity. The college of physicians have introduced the wood, the bark, and the root, into their dispensatory.

**QUERCUS**, the oak-tree. It is the *Quercus Robur*, Linn. a common forest-tree in Europe; the bark is a strong astringent, moderately bitter, having no particular smell: with a ferruginous solution, it strikes an inky blackness. The college of physicians have introduced the oak-bark into their dispensatory. It possesses the properties of cinchona, though in a very inferior degree.

**QUERCUS MARINA**. See **KALI**.

**QUICKSILVER**, or **MERCURY**, an opaque silver-coloured mineral fluid; appearing to the eye like tin or lead when melted. Its properties are described under the article **MERCURY**. This mineral is either met with in its fluid form, in the earth, or extracted by art from certain ores. There are considerable mines of it in Hungary and Spain; and what is used in Britain is chiefly procured from the former country.

**QUID LOST**, or **CUD LOST**. See **CATTLE**.

**QUIETALES**, diseases in which the voluntary and involuntary motions, and the senses, are diminished.

**QUINQUINA**, the Peruvian-bark. See **BARK**.

**QUINCUNX**, a five-ounce measure.

**QUINQUE FOLIUM**, also called *Pentaphylon*, common cinquefoil, five-fingers, or five-leaved grass. It is a trailing plant with serrated leaves, set five together on long pedicles: it is perennial, grows wild on clayey grounds, and flowers in June.

**QUINSEY**, in the human subject, the same as *Angina*. In the horse it has the name of *anticor*. See **ANTICOR**.

**QUINTESSENCES**; medicines made by adding to any essential oil twelve times its quantity of alcohol, and shaking them together. If these are distilled in a close vessel with a fire of 90 degrees by Fahrenheit's thermometer, the alcohol will rise with only the presiding spirit of the oil, leaving the grossest parts of the oil behind. Dry quintessences are made by dissolving an aromatic oil in alcohol, then adding

ten times the weight of sugar, and lastly exhaling the spirit from the sugar, which will remain dry, with the virtues of the aromatic oil in it. These whimsical preparations are rejected in modern medicine.

**QUINTANA**, an ague, the paroxysm of which returns every fifth day: the second, third, and fourth, are free from fever.

**QUITTOR**, **QUITTER**, or **QUITTERBONE**; an ulcer formed between the hair and hoof, usually on the inside of a horse's foot. It arises often from treads and bruises; sometimes from gravel, which, by working its way upwards, lodges about the coronet. If it is only superficial, it may be cured with cleansing dressings, bathing the coronet every day with lime water, and dressing the sore with precipitate. But if the matter forms itself a lodgment under the hoof, there is no way then to come at the ulcer but by taking off part of the hoof; and if this be done well, the cure may be effected without danger.

When the matter happens to be lodged near the quarter, the farrier is sometimes obliged to take off the quarter of the hoof, and the cure is then for the most part but palliative; for when the quarter grows up, it leaves a pretty large seam, which weakens the foot: this is what is called a *false quarter*; and a horse with this defect seldom gets quite sound.

If the matter by its confinement has injured the coffin bone, which is of so soft and spongy a nature that it soon becomes carious, it will be necessary to enlarge the opening, cut away the spongy flesh, and apply the actual cautery, or hot iron pointed pyramidically. Afterwards dress the bone with doffils of lint dipped in tincture of myrrh, and the wound with the green or precipitate ointment. When the sore is not enlarged by the knife, which is the best and less painful method, sublimate is generally applied, or blue vitriol powdered and mixed with a few drops of oil, which is said to act as effectually, and with less pain. During the operation of these caustics, the foot should be kept in a common soft poultice. If sinuses form, they must be laid open, and afterwards stimulated by some sharp remedy. Mr. DENNY recommends the following:

Take of Corrosive sublimate;

Red precipitate, in fine powder, of each equal parts;

Honey, sufficient to form a paste.

He directs the wound afterwards to be dressed with common digestive ointment; and advises



pressure to be made by a bandage round the coronet.

**QUOTIDIANA**; a quotidian fever. It intermits, but returns every day, and that generally early in the morning: when the fit ap-

proaches at any other time of the day, it is called *spurious*, or *anomalous*. Dr. Cullen places this genus of disease in the class *Pyrexia*, and order *Febres*. The blood is more dense in this species of intermittents than in any other.

## R.

### R A C

**R** is put at the beginning of Latin prescriptions, for *Recipe, take*

**RABIES**, i. e. **HYDROPHOBIA**. When from the bite of a mad dog the patient was supposed to have a desire of biting others, the canine madness was called *Rabies*.

**RACE**, a trial of speed between men or animals. Races are most commonly run by horses trained for the purpose. See the articles **RACE-HORSE**, **MATCH**, &c.

**RACE-HORSE**, a horse bred for the turf, or, in other words, calculated for speed. See **HORSE-RACING**. In his chapter "On Running Horses and the Turf," Mr. John LAWRENCE contends for "the necessity, or at least the utility, of a reserve of thorough-bred horses in this country, on the ground, that were the species neglected, and suffered to be indiscriminately blended amongst the whole genus, the English saddle-horse would, in all probability, become retrograde in quality, and in the course of time would degenerate into the round buttock, gummy carcase, and coarse head, of former days." In fact, examples enough of this degeneracy are always to be seen, he says, in the studs of the different breeders; neither is the number of well-shaped half-bred stallions considerable, or even sufficient for the demand of the country. In opposition to the idea which some entertain of the propriety of putting an end to horse-racing by law, "On the course only," says he, "can the worth of this peculiar species of the horse be essayed; and, independent of that object, it is scarcely probable that the breed would be kept distinct, or that any very minute attention would be bestowed upon pedigree. It is well known,

### R A C

that not only have varieties of a genus of animals been often blended and lost by neglect, but even arts and different branches of knowledge have perished in the same way. From the discontinuance of horse-racing, the English thorough-bred horse, the source of almost all that is excellent in the species, might become extinct. Thus the turf is a grand national object, and its votaries are administering, through the medium of their pleasures, to the interest and prosperity of their country."

"The speed and continuance of race-horses must necessarily be affected and governed, in certain degrees, by the weight which they have to carry; and, reasoning upon that position, it will be easily conceived, that if two horses be equally matched in point of speed and strength, and put to their utmost exertion for a considerable distance, the horse which carries the least weight, by even only a single pound, must infallibly have the advantage to a certain degree (however small), and possess the ability of going more swiftly and lasting longer than his antagonist. The swifter the pace, and the longer it is continued, the more in proportion will the horse be affected by the weight he carries. It is said, that, in running four miles, seven pounds make the difference of a distance, or two hundred and forty yards, between horses of equal goodness. Weight is therefore regulated with scientific precision upon the turf, and forms a prime consideration in all sporting transactions. The weights carried by race-horses vary from the maximum twelve stone, fourteen pounds to the stone, to a *feather*, which means a boy of the lightest weight to be found."

The thorough-bred courser, Mr. Lawrence

thinks, in a general point of view, the most useful species of the horse, as being applicable to every purpose; which cannot be asserted of any other species. He defines a thorough-bred horse, or racer, to be originally the produce of Asia or Africa, or of the south of Europe. The chief object in breeding a race-horse, he thinks, ought to be truth and symmetry in the cardinal points.

As to the "integrity of his blood," he says, "a true racing pedigree, according to the rule of the present time, ought to prove under the hand of the breeder, that the horse has descended from ancestors of genuine racing blood, without the intervention of a single bastard cross. If the pedigree be long, it is common to take it for granted that there is blood sufficient, although there be no mare mentioned in it, which has proved her blood by her having actually raced; but usually all the horses are reputed runners, or brothers of such. The greater number of mares which have raced contained in a pedigree, the surer and more valuable, no doubt, it must be, particularly if the last-mentioned be specified as a reputed racer, or a natural Arabian or Barb. A pedigree of one single descent is held sufficient, when the sire and dam are named as reputed and tried runners: otherwise a short pedigree of three or four descents would not constitute a horse thorough-bred, though it might serve for a hunter.

"It is yet easy to conceive," he adds, "how liable the pedigree of a horse must be both to error and imposition, and that the best proof of true blood must ever consist in performance. Various accidental bastard crosses have occurred in our racing breed, at different periods, chiefly distant ones; and they are frequently easy to distinguish in the figure of the stock, by a critical eye. The far greater part of those horses brought over to this country, under the general appellation of Arabians, have, I believe, never seen Arabia, or else have been of its inferior breed. They are usually purchased in the Levant, Barbary, or the East Indies, by persons totally unacquainted with horses, or at any rate with the peculiar purpose for which such horses are designed; hence a number of inferior and half-bred Arabians have been brought over at a useless expence, to deteriorate instead of amending our racing breed, and to bring Arabian blood into disrepute."

With a view to assist his readers in forming adequate ideas of the phenomena of blood in horses, Mr. Lawrence, in his excellent chapter "On running Horses and the Turf," exhibits the

following facts, which, he says, rest upon the ground of constant and invariable experience, namely, "Fine and delicate horses, the natives of warm climes, excel in swiftness; the most perfect of these were originally found in Arabia, but they are improvable in their descendants by a more fruitful country; the Arabians tried in England have never proved themselves, in any respect, equal upon the course to the English racers, the descendants of their blood. Although the general characteristic of thorough-blood is speed, yet the true test is not speed, but continuance, since many common or half-bred horses have been known to possess racing speed, but no instance has ever occurred of its continuance in those beyond perhaps half a mile: the powers of continuance increase in proportion to the quantity of blood; thus, three-part bred horses will persevere longer than half-bred, and those got by bred horses out of three-part bred mares will sometimes equal the real racers. Although, amongst horses equally well bred, superior external conformation will generally prevail in the race, yet racing can in no sort be said absolutely to depend on good shape; it depends entirely on blood: for example, take the worst shaped true-bred horse you can find, and the best shaped common horse; let the latter have a fine coat, loose thrapple, high and declined shoulder, length, speed, in fine, all the admired points of the racer (and such common horses are occasionally to be found); let them run four miles, and the bred horse, although out-footed at first, shall always win the race. This principle is so universal, that perhaps it would be altogether impracticable to find a thorough-bred horse in England sufficiently bad, to be beat four miles by the speediest and best common bred hack. All bred horses cannot race, many of the highest blood having neither the gift of speed nor continuance; many are defective in the material points of conformation, as it happens in common horses."

The author cites some curious instances of speed. "The usual trial of speed in English racing," says he, "is the distance of a single mile; of continuance, stoutness, or bottom, four miles. It has been asserted with confidence, but not proved, that Flying Childers ran a mile over Newmarket in the space of a minute; a velocity so immense, that it turns one's ideas to speed in the abstract, or ubiquity. It has, however, been really performed in a few seconds over a minute; an instance of which, within my present recollection, is that of Fire-tail and Pumpkin.



"The distance of four miles was ran by Childers, in 1721, carrying nine stone two pounds, in the space of six minutes forty-eight seconds. This wonderful animal leaped ten yards with his rider, upon level ground; and is supposed to have covered, at every stride, a space of twenty-five feet, which is more than forty-nine feet in a second. Bay Malton ran four miles over York, in 1763, in seven minutes forty-three seconds and a half. Eclipse ran the same distance over York, in eight minutes, with twelve stone."

To those who have pretended, that they were unable to discriminate between speed and stoutness in a race-horse, Mr. Lawrence replies in a very satisfactory manner.

"After all," says he, "what is the cause or basis of that superior speed, endurance, and strength, which distinguish the southern horse? Doubtless a peculiar innate quality of body, which some attribute to the dry and elastic air of those countries where he is bred, but which appears to me not altogether satisfactory. The game, or wild animals of northern climes, possess the peculiar qualities of the race-horse, which they lose in a few generations, on being domesticated; their bones becoming soft and spongy, like those of tame animals in general. The race-horse is much stronger than the cart or common horse, weight for weight; his substance being of a more solid texture."

"The training of race-horses (Mr. L. says) is now a much more simple and rational process than in former days, and is indeed making a gradual approach to perfection. It was the fashion of old, to stuff horses, under preparation for the course, with many different kinds of baked bread, to load them with an immense burden of clothes, to force them to breathe a suffocating heat within doors, and greatly to overdo them with severe and long-continued exercise. Breads have long since been banished the running stables, where the heaviest oats, and the hardest and sweetest hay, are found to answer completely every purpose of nutrition. Race-horses are no longer stifled with heat, like variolous patients under the ancient regimen. The usual length now of the exercise gallop, is from a mile to a mile and a quarter; of the sweat, from four to five miles."

The training of a race-horse must, of necessity, be most regular and efficacious, on account of the superior and sudden exertions required of him. Hence the custom of sweating, either once in ten days, weekly, or still oftener according to the animal's hardness of carcase and proneness to obesity. The method of

sweating a race-horse, is to load him with a double or triple quantity of clothes, and to run him four or five miles upon the turf, keeping him in general to a long steady gallop, or his rate, but making occasional bursts of speed. After this operation, the horse is taken within doors, and gradually uncovered, whilst the sweat is scraped from all parts of his body with an edged wooden instrument; when, being rubbed perfectly dry, his accustomed clothing is replaced. Sweating is usually performed in the morning.

Mr. Lawrence next describes the familiar life of the race-horse. His winter, he says, is usually spent in the paddock and loose stable, enjoying himself at his ease, until the period of physic arrive, which must be so fixed, that there be at least an interval of two months between the last dose and the first race: this interval is of course spent in exercise. The author assumes here, with the majority of persons concerned in training, that no race-horse can perform, to the full extent of his natural powers, without having undergone a course of purgatives. The spring and summer are passed in exercise and racing, the horse perhaps travelling to a number of different courses in the country. A racer travels, perhaps, from twenty to twenty-four miles per day; and this, on the hard road, must of course abate his speed, whence arises the advantage of those which have been trained on the spot where they are intended to run. Mr. Lawrence says, he has also been assured by grooms, that a horse, *in the midst of the racing season*, when a sufficient interval can be spared, is frequently much benefited by a dose of physic. That the practice admits of great extremes, the following judicious remarks very fully evince.

"The purging system of the running stables," says Mr. Lawrence, "is still liable to solid objections. Grooms always fancy that the body of a horse abounds with noxious humours, which require specific purgation. In their ideas, racing and aloetic or mercurial physic are connected by an indissoluble chain; and these nostrums are supposed to operate by a peculiar innate virtue or charm. All this is of much the same weight with any other nonsense which prescription may have sanctioned. The exhibition of physic in this case bears no more relation to the expulsion of evil humours from the body of a horse, than to the extirpation of corns in his feet: the sole intent is the detrusion of accumulated alvine fæces, in better English, unloading the stuffed bowels, attenuating the blood, and refrigerating or cooling the general habit. Against the best aloes no general ob-

jection can possibly lie; it is a cathartic, equally mild, safe, and efficacious; but I know of no possible business a groom can have with mercurials, in the case of physicing merely for condition. In some instances, the neutral salts might be substituted even for aloes, with great advantage; I mean with washy, hot, and irritable horses, which soon part with their flesh. If a person accustomed to the stable forms, would not be satisfied that his horse could race, having been purged with Glauber's salts only; let him make the essay with one which he does not intend should run to win.

"It appears to me, that race-horses are invariably ever-purged, either by an excess in the number or strength of the doses, or by the use of Barbadoes aloes, or mercury. Such a cause can never fail of the effect of detracting from a horse's speed, and of debilitating him, however it may possibly elongate his stride. The cords and pulleys of the machine are deprived of too much of their spring, in which consists both the edge of speed and the grasp of continuance. The exercise also is, I am convinced, even yet too severe and indiscriminate, and our horses are often brought to the post in a condition much below their work. The external signs of this error are, want of cheerfulness, delicate feeding, refusal of water, or greediness of it, loose testicles, and backwardness in recovery of flesh after training. Many a colt, I believe, is tried and rejected, at the same time, seven or ten pounds the worse over the course, for his exercise and physic."

Mr. Lawrence acknowledges the truth of the common observation, "that a horse cannot run fat;" but insists, at the same time, that a very erroneous use is generally made of the maxim. The material question, he says, is, what is the proportion of physic and exercise calculated for such horses? a question which must be left to the discretion of men of sense and experience. If a horse, after three doses of physic, regular gallops, and a week's sweating, still carry a shew of superfluous substance, Mr. Lawrence would even start him under this disadvantage, rather than attempt to break down the texture of the animal with mercurial purges, or work him off his legs and speed, with extra sweats and violent galloping. "How often," says he, "have I heard of horses, which were before ready to devour the manger, sweated out of their appetite, and then, if time could possibly be allowed, to mend the matter, purged with strong mercurial physic. The universal panacea of purgation is resorted to on all occasions."—"The error is still more gross, to

over-train horses of naturally weak stamina and irritable habits; such should always have a due portion of fleshy substance left to support the tremulous and flagging fibres. I suspect the usual routine of exercise is always too severe for these, but from its being general and common to them all, its ill effects are less apparent. There are horses which become bone lean in two or three weeks exercise; I would ask, why continue to sweat such, since they appear to have no fatty substance left to sweat away? Washy horses particularly, I believe, get rid of their internal fat first, and, for the sake of their wind, would it not be better to sweat or rather give them a four-miles moderate gallop, in only their ordinary clothes, without any additional weight? which last, to the amount generally laid on, must debilitate in a very considerable degree. I have seen some of your hot fly-away racers, so excessively influenced by nervous affection, that their lives seemed to be one continued state of anxiety and inquietude. These are always found awake to dreadful expectation: the groom touching their body-girth, sets their hearts palpitating; the act of taking down the saddle operates as a cathartic to the imagination, which, from sympathy, is instantaneously followed by visible effects; they well know the sweating day, and the sight of the sweating clothes gives them a fit of the horrors. The secret of training these horses is, I should think, to give them as little work as possible, and that by themselves; to endeavour to render their exercise rather a pleasure than a fatigue and a terror to them; and not to be alarmed at the little extra flesh they may bear, which will surely rather help to carry them through, than retard their course."

The same well-informed writer offers some remarks upon an established doctrine of the stables, that half-bred horses will not stand training: "There is no doubt," he says, "that full-bred cattle are naturally best adapted to such a purpose; but the inability of the half-bred to endure this discipline arises chiefly from its severity, and the want of its proper adaptation to their natural powers. There is comparative speed and stoutness in every variety of the horse; and Bracken has said, that, by proper training, he could enable even a cart-horse to run up to his foot. A remarkable quality in the race-horse is, that which is styled, in the language of the turf, *running to the whip*; it means answering every stroke of the whip with an additional exertion, as long as nature lasts. Horses of this generous kind are termed 'honest,' and 'stout;' but the



terms are usually confounded; for many a horse is honest, without being endowed with those constitutional powers necessary to produce stoutness or continuance; and many which possess those in the amplest measure, which they occasionally evince, are yet never to be depended upon. It is dangerous to offend these last with the immoderate use of the whip or spur, and I have known a winning horse stopped instantly by a foul cut under his flanks: I have also known, and indeed ridden horses, honest and stout as the course was long, yet with such indignant stomachs, and such critical skill in their own powers, that being convinced in a race of the impossibility of success, if abused with the whip, they would instantly shorten their stroke; but if nursed, and encouraged with a pull, the use of which every jockey knows, would, although beaten, strain every nerve to the last extremity. It is a strange quality in the true whipped horse, that he seems really to have a penchant for the whip and spur, since he absolutely will not keep to his stroke without the one or other of them, and never takes offence at either."

Many inferior points relative to the race-horse are considered by Mr. Lawrence in his "*Philosophical and practical Treatise on Horses*," which every person that is at all interested in the subject will do well to consult. See also the article **MATCH**.

**RACHIALGIA**, i. e. **COLIC**, particularly the colica pictonum.

**RACHITÆ**. The semispinal muscles are thus called by some.

**RACHITIS** (*rachitis*, from *raxis*, the spine of the back), because it was supposed that a fault in the spinal marrow produced it. It did not appear in England till about the middle of the seventeenth century, from whence it is said to have spread over all Europe, and whence it got the name of *English*. It is a chronic disease, nearly a-kin to scrofula, or perhaps one of its forms. It is usually reckoned a species of *Cachexy*. Dr. Cullen places this genus of disease in the class *Cachexiæ*, and the order *Intumescentiæ*. He distinguishes two varieties: 1. *Rachitis Simplex*, when there is no other disease. 2. *Rachitis cum aliis Morbis Conjuncta*, when the whole habit is affected, but more particularly the heads of the bones or joints, with their ligaments or cartilages, and also the whole cranium. Usually the subjects are children, from six months to six years of age, though sometimes its attack is not before the sixth year, or even after.

**RACK**, a pace in which a horse neither

trots nor ambles, but shuffles as it were between. The racking-pace is indeed much the same as the amble, only it is a swifter timed and shorter tread.

**RACK**, a wooden frame made to hold hay or fodder for cattle.

**RACK-BONES**. By this name the vertebrae of the horse are called by Gibson, and his predecessors of the old school. See the article **SKELTON**.

**RACOSIS** (*ρακοςις*), excoriation of the relaxed scrotum.

**RADIÆUS** (from *radius*), the same as **RADIALIS**.

**RADIALIS**, or **RADIÆUS**. In the human subject there is the *Radialis externus*, or *Extensor Carpi Radialis*, and the *Radialis internus*, which is the second muscle of the wrist. The last arises from the internal extuberance of the humerus, and upper part of the ulna, and, stretching along the *radius*, is inserted into the first bone of the metacarpus that sustains the fore-finger, and, with the cubitæus internus, bends the wrist. Both have their name from the *radius*. These muscles in the horse are shewn in Plate XIV. See the description of parts in "*the shoulders and upper limbs*," under the article **HORSE**.

**RADIALIS ARTERIA**, a branch of the humeral artery, which runs down the side of the radius, covered by the supinator longus. At the wrist it divides into two, one of which passing over the palm of the hand, is lost in the fleshy part of the thumb: the other passes on and between the metacarpal bone of the fore-finger and the first bone of the thumb, plunges into the palm, and forms a sort of arch there.

**RADIALIS**. For the nerve so called in the horse, see Plate X. and the description of parts "*in the shoulder*," under the article **HORSE**; also Plate XI. with description of "*the right upper limb*."

**RADIALIS VENA**. When the cephalica has reached the bend of the arm in the human subject, it divides into two principal branches: one is called the *Radialis externus*; this spreads about and along the fore arm.

**RADICAL MOISTURE**, a term that some have had strange notions about; but if it be limited to any intelligible signification, we can understand by it nothing else but the mass of blood which is the promptuary from whence all other fluids in an animal body are derived.

**RADIUS**, a bone of the fore-arm, which accompanies the ulna from the elbow to the wrist, in the human subject. In its upper end it has a small cavity, which receives the outer

protuberance of the humerus. The circumference of the cavity rolls in the small sinus in the upper end of the ulna. Near its lower end, which is bigger than its upper, it has a little sinus, which receives the end of the ulna; and in its extremity it has two sinuses, which receive the bones of the wrist. Although the ulna and radius accompany one another, they touch but at their extremities; for they bend from one another in the middle, but are tied together by a strong and broad membranous ligament. The upper end of the ulna is largest, because upon it the articulation at the elbow is performed; but the lower end of the radius is largest, because upon it only the hand is articulated. The radius moves either backwards or forwards upon the ulna, by which means the palm of the hand is turned either upwards or downwards; which two motions are called PRONATION and SUPINATION. This bone in the horse is shewn in Plate V. *n, o, p, q, r*. See the description of "*bones in the right upper limb*," under the article BONES.

**RADIX**, the root of any plant or vegetable. In a figurative sense, *radical* is frequently used to signify the principal or generative point of any body or quantity, as *radical moisture*; and a number, which, multiplied into itself, makes a square, is called the *root*, or *radix*. *Roots* are divided into different species: Linnæus divides them into fibrous, bulbous, and tuberous, which he subdivides into other distinctions.

**RADULA**, a wooden spatula, or scraper.

**RAG**, or **RAKE**, a company or herd of young colts.

**RAGOT**, a name given, in the old manege, to a horse that has short legs, a broad croup, and a strong thick body. It differs from a *gouffaut* in this, that the latter has more shoulders, and a thicker neck.

**RAGSTONE**, a variety of the green species of the *Petra vulgaris*: it is of a dull greenish colour; of a light weight, yet of a firm and compact structure, and somewhat glossy; and found in Westmoreland.

**RAISE**. To raise a horse upon corvets, upon caprioles, upon pesades, is to make him work at corvets, caprioles, or pesades. Sometimes the riding-masters say, *raise the fore-hand* of your horse. Raise is likewise used for placing a horse's head right, and making him carry well.

**RAKE**. A horse is said to *rake*, when, having been strained, he goes lame, and drags one of his fore legs in a semicircle, which is most apparent when he trots.

**RAKE OF COLTS**. See **RAG**.

**RAKING**, or **BACK-RAKING**. See **CLYSTER**. **RAMENTA**, are little slips, shreds, or filings of any thing.

**RAMEX**, an hernia.

**RAMIFICATION**, a collection of small branches shooting out from any great one. Thus, in *Anatomy*, the branchings of an artery, vein, or nerve, are called its *ramifications*, from *ramus*, a *bow*, or *branch*.

**RAMINGUE**; a French term for a restive sort of horse, that resists or defends himself with resolution against the spurs.

**RAMUS**, a branch; or that division of a stalk or tree called a *Bough*. Anatomists name *Ramus inferior* the third maxillary branch of the nerves which proceed from the fifth pair; and *Ramus superior*, the *Frontal Nerve*.

**RANA**, the frog, or paddock. See **FROG**.

**RANCID**, a name applied to things which have contracted a strong offensive smell by keeping, as all fat substances.

**RANGER**, a sworn officer of a forest or park, whose business it is to walk daily through his charge, to drive back the wild beasts out of the purlieus, or disforested places, into forested lands, and to prevent all trespasses done in his bailiwick, at the next court held for the forest.

**RANGIFER**, a kind of stag, so called from his lofty horns, resembling the branches of trees.

**RANULA**, the name of a tumour seated under the tongue. It has been thought to resemble a little *frog*, whence the name of *Ranula*, though some say it is thus named, because it alters the voice of the patient so as to make him croak like a frog: this tumour is formed in the salivary glands under the tongue, and is seated on either side the frænum.

**RANULÆ**, and **RANULARES**, are those veins which lie conspicuous under the tongue; and this term is likewise used, by surgeons, for little swellings upon the glands about the same parts.

**RAPA**, turnip, a species of *Brassica*.

**RAPHANIA**, a nervous affection of the spasmodic kind, in the human subject, in which there is a violent contraction of the joints, with convulsive agitation, and great pain at various periods. Linnæus gave the name, from its supposed cause, viz. the seeds of the *Raphanus Raphanistrum*. Dr. Cullen places it in the class *Neuroses*, and order *Spasmi*.

**RAPHANISTRUM**, charlock, a species of *Raphanus*.

**RAPHANUS RUSTICANUS**, also called *Sylvestris*; horse-radish. It is the *Cochlearia Armoracia* of Linnæus. The college have re-



tained this root in their dispensatory. It is an ingredient in the Spiritus Raphani Compositus, formerly called Aqua Raphani Composita.

**RAPISTRUM**, CHARLOCK, or CHADLOCK.

**RARE**, an epithet applied to a body that takes up more space, in proportion to the quantity of matter it contains, than another does. Hence,

**RAREFACTION**, is that extension of the parts of any body, that makes it take up more room than it did before. In distillation, the steam produced is rarefied water.

**RASE**. To rase, or glance, upon the ground, is to gallop near the ground, as most of our English horses do.

**RASPATORY** (from *rado*, to scrape), an instrument with a triangular head, sharpened at the edges, used by surgeons for scraping a carious bone.

**RASURE**, the same as ABRASION, or any thing done by scraping or shaving, as the *rasura cornu cervi* are made.

**RAT-TAILS**, excrescences which creep from the pastern to the middle of the flank of a horse; so called from their resemblance to a rat's tail. Some are moist; others dry: the former may be treated as in the cure of the grease; and the latter with the following mercurial ointment.

Take of Crude mercury, one ounce;

Venice turpentine, half an ounce:

Rub them together in a mortar, till the globules of the quicksilver are no longer visible; then add

Hogs-lard, two ounces. Mix.

If the hardness does not submit to the last medicine, it is usually pared off with a knife, and dressed with turpentine, tar, and honey, to which verdigrease, or white vitriol, are occasionally added. Before the use of the knife, however, Bartlett advises this ointment:

Take of Black soap, four ounces;

Quick-lime, two ounces;

Vinegar, enough to make an ointment. Mix.

**RATIO**, reason, is when two bodies are compared with one another, with respect to their bulk. Some confine it to numbers only, and call it *proportion*, expressing by it the comparison of one single quantity to another.

**RATTLING**, a term used of a horse when a noise is produced by the air entering between the prepuce and the penis, in trotting.

**RAUCEDO**, and **RAUCITAS**, hoarseness; a

diminution of the voice, sometimes attended with a preternatural asperity or roughness. The parts affected are the aspera arteria, and particularly the larynx. It is generally a symptom of catarrh in the human subject, but sometimes it is a species of *Paraphonia*.

**RAZE**. A horse is said to have razed, whose corner teeth cease to be hollow. In fact, the cavity, where the black mark was, is filled up and become even, so that the mark wholly disappears. See the article AGE OF A HORSE.

**RE-ACTION** (from *reago*, to act back upon), a term much used in physics. It is also employed in describing the symptoms of some diseases.

**REALGAR**, a species of *Arsenical Flos*, of a red colour: it is mineralized with sulphur, is always glossy, but not always transparent.

**REAR**, in the manege, that action of a horse when he rises upon his hinder legs, as if he would fall quite over.

**RECEIPT**. See **RECIPE**.

**RECEPTACULUM CHYLI**, the receiver of the chyle. See **LACTEALS**.

**RECEPTarii MEDICI**; so Langius calls those who set up for physicians upon the stock only of a great many receipts, without being able to reason about their properties or efficacies. See **RECIPE**.

**RECIPE**, take. It is usually placed at the beginning of prescriptions, and is generally written thus  $\mathcal{R}$ , or else with the character for tin  $\mathcal{T}$ , over which metal Jupiter was supposed to preside. Hence its use denoted the invocation of Jupiter, before prescribing, for the success of the remedy.

**RECIPE**, a receipt or prescription for a medicinal compound. Mr. Clark, of Edinburgh, in his observations on drinks or drenches, says, "It has been the practice amongst farriers to distinguish their formulæ of medicines, or *recipes*, as they are called, by the titles of *cures* for particular diseases; and this practice has been too much followed, even by authors who have treated on the diseases of horses. Accordingly, it happens, that many people, if they can but distinguish one symptom which is said to attend any particular disease, immediately apply to their *receipt-book* for a cure, without troubling themselves any farther in investigating the cause, the nature, and the various symptoms attending different diseases, that have a resemblance to one another; hence, very gross and dangerous mistakes are made. Thus pleuritic complaints have been taken for the colic, on account of some of the symptoms in the latter that are likewise attendant on the former complaint, and

treated according to that pernicious method too much followed in cases of colic, by giving hot irritating medicines, ardent spirits, &c. till the mistake has been discovered when too late to admit of a remedy. The only symptom that is common in these two cases, and which are in some respects similar, is that of the horse's lying down frequently, and rising up suddenly; but there are other symptoms which distinguish the one from the other, and may easily be perceived by an attentive observer; for instance, pleuritic complaints are more or less attended with a short troublesome cough, which colic pains are not. It ought, therefore, to be a general rule with every man who takes upon him to prescribe medicines, to consider *every* symptom with the greatest attention, and to compare each with those that are in any respect similar in other diseases; and, when he has carefully done this, he will be able to make a proper distinction, and, in a great measure, to determine the true seat of the disease, so as that he may apply none but the proper remedies."

These observations are very much in point; for it cannot fail to strike every rational observer that a *recipe* or *cure* (as it is called), for a particular disease, must be a dangerous, rather than a salutary, weapon, in the hands of those who have not sufficient knowledge to distinguish one disease from another which bears to it only a remote resemblance.

**RECIPIENT**, a kind of vessel used by chemists, which in distillation is made to contain what is drawn off.

**RECIPROCATION**, is when two diseases or symptoms alternately succeed one another.

**RECREMENT**, sometimes signifies any superfluous matter mixed with another that is useful; and sometimes such secreted juices in an animal body as are afterwards of use to the economy.

**RECTIFICATION**, the drawing any thing over again by distillation, to make it more pure.

**RECTI MUSCULI**. Those muscles whose fibres are *rectilinear*. Instances of these in the horse occur in Plates II. III. X. XI. and XX. See the descriptions, in the several articles to which the plates are annexed.

**RECTUM**, the last of the large intestines called the *intestinum rectum*, or *straight gut*. It is every-where covered with longitudinal fibres, and has strong circular ones for expelling the feces: it is not furnished with bands as the colon is, nor is it covered with the peritonæum, as are the other intestines. See **ABDOMEN**.

**RECURRENT NERVE**, a branch of the par vagum, bestowed upon the organs of speech, in the human subject, whence it is also called the *Vocal Nerve*. The term *recurrent* applies to it, because it descends and ascends again to supply the muscles of the larynx.

**REDINTEGRATION**, a term used by the old chemists, who thus called the restoring any mixed body or matter, whose form had been destroyed, to its former nature and constitution.

**RED LEAD**, i. e. **MINIUM**. See the articles **MINIUM** and **LEAD**.

**RED-WATER**, a disease in sheep. See the articles **SHEEP** and **ROT**.

**REDUC**, also called **REDUX**, or **FLUX**; that substance by which calcined metals or minerals are separated from the adventitious matter with which they are combined, and reduced to a regular form. *Fluxes* are either of the vitreous or of the saline kind, such as *borax*. There are *fluxes* of a yet cheaper kind; such are dried wine-lees, cow-dung, horse-dung, fuller's-earth, iron-filings, pot-ash, &c.

**REFECTION**, the receiving food or nourishment.

**REFLUENT**, flowing back, a term generally ascribed to the venous blood, because that flows back to the heart.

**REFRIGERATORY**, a cooler. It is that part of a distilling vessel, that is situated about the head of a still, and filled with water to cool and condense the rising vapours. This is now generally done by a worm, or spiral pipe, running through a tub of cold water.

**REGENERATION**, a term used in so different a manner by the chemists, that it is hard to say what they meant by it; but it seems to be what they understood by **REVIVIFICATION**, which see.

**REGIMEN**, a term used for that care in diet that is suitable to any particular course of medicine.

**REGISTER**, a contrivance in chemical furnaces to make the heat immediately more intense or remiss, by letting more or less air pass through the fire.

**REGULUS**, the finest and most weighty part of a metal, which settles at the bottom, upon melting.

**REINS**, or **KIDNEYS**, of a horse. See the article **KIDNEY**.

**REINS**, two long slips of leather on each side of a curb, or snaffle, by which the rider keeps his horse in subjection.

**RELAXATION**, is a dilatation or slackening of any parts or vessels, as in spasm.



**REMEDY**, any thing made use of in the cure of a disease.

**REMISSION**, a term which denotes that a distemper abates, but does not go *quite off* before it returns again. This is common in fevers which do not quite intermit.

**REMOLADE**, a sort of compounded honey charge for horses, recommended by *Solleysel*. The following may serve as a specimen of this sort of remedy. Take three pints of lees of wine, half a pound of hogs-grease, boil them together for half an hour till they be very well incorporated one with another; then add honey, pitch, Burgundy pitch pounded, common turpentine, of each half a pound; stir these in the other over the fire, till they are all melted and well mixed; then add bole armoniac, a quarter of a pound; take the vessel off the fire, and stir it continually for a quarter of an hour longer. If the charge is not thick enough, it may be brought to a due consistence with a little wheat-flour; and if it be too thick, it may be thinned with the lees of wine.

**RENALES ARTERIÆ**, commonly called **EMULGENTS**, are generally two in number, and go out laterally from the lower descending aorta immediately under the mesenterica superior, one to the right-hand, the other to the left. They run commonly without division, and almost horizontally, to the kidneys, into the depressions of which they enter by several branches. They sometimes send branches to the glandulæ renales, membrana adiposa of the kidneys, and even to the diaphragm. See **KIDNEY**.

**RENALES GLANDULÆ**. See **KIDNEY**.

**RENALES VENÆ**, also called *Emulgentes*. These spring from the inferior vena cava, when it arrives at the kidneys, into which these branches are sent. See **KIDNEY**.

**RENES**, the *Kidneys*. See **KIDNEY**.

**RENETTE**, an instrument of polished steel, with which farriers discover a prick in a horse's foot.

**RENOVATION**, in chemistry, the restoration of a mineral body to a perfect state, from one which is imperfect.

**REPAR'T**, in the manege; to put a horse on, or make him part a second time.

**REPELLENTS**, a class of remedies, scarcely acknowledged by the moderns, and of which the following circumstances are related. To understand rightly the operation of such medicines, say those who attempt the explanation, it may be necessary to observe, that by *repelling* is meant those means which prevent such an afflux of a fluid to any particular part, as would

raise it to a tumour; but, to know how this may be effected, it will be convenient to attend to the several causes which can produce a swelling, or force out of the vessels any of their fluid contents by some unnatural discharge.

All tumours have necessarily one of these for their cause; either an increase of the velocity or quantity of the fluids, or weakness in some particular part: and sometimes both concur. An increase in the velocity of the fluids makes them more forcibly push against and distend all the parts in their circuit: if, therefore, any part be unequally pressed, or relaxed by external injury, that will be more elevated than any other; and for want of equal resistance with the rest of the body, will at length receive such a quantity of fluid as will raise it into a tumour, especially if any of its vessels be obstructed; because the protrusion of fresh matter, *a tergo*, will continue to add to it, until the part is upon the utmost stretch, and can hold no more. In this case, all those means are said to be repellent, which check the growth of the tumour, and assist the reflux blood in taking up the obstructed matter, and leading it again into the common stream. This intention is chiefly favoured by *evacuation* and *revulsion*; for whatsoever lessens the quantity of the fluid, will diminish the force upon the tumefied part. But it concerns us most to know how external applications to the part itself promote this end.

A medicine becomes repellent, by consisting of such subtle parts as may be partly transmitted through the pores, and help the obstructed matter to fall again into the circulating current. But possibly such things may likewise put the obstructed fluid into a ferment, by which it sooner turns into pus, and then they come under the denomination of *Suppuratives* or *Ripeners*. What therefore in the most strict sense is to be reputed a *repeller*, is that which constricts and strengthens the part, so as to make it resist any such lodgment. Some things answer this end only by stimulating the fibres of the tumefied part, whereby the obstruction is sometimes forced away. Such a sort of effect will be occasioned by the sudden application of any thing extremely cold, as common water; and especially if it be impregnated with any of the neutral or metallic salts in a proper proportion. There are many other means which contribute to favour or retard this intent; but notwithstanding all that has been said, their mode of operation is by no means well understood.

**REPERCUTIENTS**, the same as **REPELLENTS**.

**REPOLON**, in the old manege; a demi-

volt, the croupe being clofed at five times. The Italians are fond of this manege.

REPOSTE, in the manege, the vindictive motion of a horfe that answers the spur with a kick of his foot.

REPRISE, a leſſon repeated, or a manege recommenced; as, to give breath to a horfe upon the four corners of the volt, with only one reſpriſe; that is, all with one breath.

REPTILES (from *reps*, to *creep*), are all thoſe creeping animals which reſt upon one part of their body, while they advance the other forward. Such are ſnakes, and all terreſtrial beings unprovided with feet.

REPULSION, the cauſe which oppoſes itſelf to abſolute attraction. This has been acknowledged by all who were converſant in physics, with reſpect to the celeftial bodies; and it has been deemed a power as real as attraction, which repels bodies after they have approached each other to a certain point, and prevents their uniting together. Many have rejected this repulſion, which ſir Iſaac Newton had allowed in ſublunary things, but if we advert to many of the operations of chemistry, it is impoſſible not to admit a retropulſive property in bodies.

RESIDUE, the *fæces*, or ſettling of any liquor.

RESIN, or ROSIN, a common name for turpentine which has been deprived of its eſſential oil by diſtillation. It is a uſeful ingredient in ointments, plaſters, &c.

RESINS (*refina*, from *refeo*, to *flow*; becauſe they flow from vegetable ſubſtances); all ſorts of exudations from evergreens, as turpentine, tar, &c. are in a general acceptation included under the name of *refins*. Eſſential oils, indurated by age, or by acids, are called *refins*. When the eſſential oil of the exudations from ever-green trees is exhaled, the remaining maſs is called *refin*. As *refin* conſiſts of oil and acid, it is artiſicially produced by the admixture of vitriolic acid and ſpirit of wine, or the ſpirit of turpentine. The *yellow refin* is procured from the *pinus ſylveſtris*, and the *pinus abies*.

*Refins* in general diſſolve in alcohol. It is chiefly by this means that they are extracted from the ſubjects in which they are contained. Thoſe parts of vegetables which abound with eſſential oils, and with *refins*, and are poſſeſſed of flavours and aromatic qualities, may be reduced into an extract with this menſtruum. *Refins* alſo diſſolve in expreſſed eſſential oils; and may be united with water by means of the ſame intermedia which render fluid oils miſcible with water. In a heat leſs than that

of boiling water, they melt into an oily fluid, and in this ſtate they may be incorporated one with another. In their reſolution by fire, in cloſe veſſels, they yield a manifeſt acid, and a large quantity of empyreumatic oil.

The acrid *refins* exhibited by themſelves tenaciously adhere to the coats of the inteſtines: by their ſtimulating power they irritate and inflame them, and thus produce ſpaſms, inflammations, &c. Theſe inconveniences are remedied by alkaline ſalts, by ſoap, and in a good meaſure by ſugar, if they are triturated with the *refin*, before they are adminiſtered.

*Refins* act principally by irritating the ſtomach and bowels, and by attenuating the fluids: if the irritation is not too ſudden, they paſs off by ſtool.

The name of GUM-RESIN is given to a union of gum and *refin*. Many vegetables contain mixtures of this kind, in which the component parts are ſo intimately united, with the interpoſition perhaps of ſome other matter, that the compound, in a pharmaceutical view, may be conſidered as a diſtinct kind of principle; the whole maſs diſſolving almoſt equally in aqueous and in ſpirituous liquors; and the ſolutions being not turbid or milky, like thoſe of the groſſer mixtures of gum and *refin*, but perfectly transparent. Such is the aſtringent matter of biſtort-root, and the bitter matter of gentian. It were to be wiſhed that we had ſome particular name for this kind of matter; as the term gum-*refin* is appropriated to the groſſer mixtures, in which the gummy and reſinous parts are but looſely joined, and eaſily ſeparable from one another.

As the effects of medicines generally depend upon their ſolubility in the ſtomach, it is often neceſſary to bring their inſoluble parts, ſuch as reſinous oily matters, into the ſtate of gum-*refin*; this is done by the mediation of mucilage.—Hence theſe matters become more ſoluble in the ſtomach; and the liquor thus prepared is called an emulſion, from its whitish colour reſembling milk.

RES NATURALES, the naturals. According to Boerhaave, theſe are life, the cauſe of life, and its effects. Theſe, he ſays, remain in ſome degree, however diſordered an animal body may be.

RESOLVENTS, ſuch medicines as looſen and open obſtructions. Hence,

RESOLUTION, is the opening or looſening of any body. A reſolution of crude matter in the body is ſaid to be effected when that matter is by any means ſo changed as to become harmleſs or ſalutary; being of itſelf, a



complete cure, performed without any apparent evacuation. Tumours are thus said to be *resolved* when disposed by the application of a plaster or liniment.

RESP, the same as RED-WATER. See the latter.

RESPIRATION (from *respiro*, to take breath), *breathing*; or the action of taking in and discharging the air from the lungs. It includes, therefore, *inspiration* and *expiration*. As soon as an animal is born, the air rushes into its lungs and distends them; and as heat rarifies the air, its force is so increased, that by expanding the lungs the whole breast is distended. Thus the rarefying air, distending the lungs every way by its natural spring, increased by heat, may be considered as the first mover in the action of respiration. By this first distension of the lungs it happens that the blood which had hitherto passed by the foramen ovale, whilst the foetus continued in the womb, is now obliged to take a different way, and pass by the pulmonary artery and veins; and the former passage, by this means, is rendered useless. *This makes it necessary that respiration be continued for ever after during life.*

As the spring of the air is increased by the heat of the lungs, so the same air, rarefied by the heat it meets with, becomes lighter than the external air, and is made to reascend by the contraction of the diaphragm and intercostal muscles, which are antagonist powers to the dilating one of rarefied air.

After the first expiration, a portion of the inspired air remains, which is rarefied by the heat to which it is subjected; thus the external or atmospherical air again descends into the lungs; and as in the first instance of respiration the same circumstances follow, so inspiration and expiration continue to succeed, until with the last expiration death is ushered in.

Respiration is partly voluntary and partly involuntary; but, as we determine this or the other muscle to action by the influence of the will; so we exert a similar power on the organs of respiration by the same means.

Some assert that the elevation of the breast by means of the intercostal muscles is necessary to inspiration; but perhaps a due attention to these muscles will discover to us that their action is only during expiration, and if so this theory falls to the ground.

The uses of respiration are many: Some of them are as follow. 1. By inspiration, air is duly received into the lungs, in order to the creation of sound by the voice, and to impregnate the blood with oxygen, which is a general

stimulant of the habit. 2. By expiration the defect of perspiration through the skin is in a good degree regulated; for much of the perspirable matter is carried off from the body with the air which is expired; and in cold weather, &c. when the discharge is lessened through the skin, there is a proportionable increase of the same from the lungs.—Again, as the pulse is accelerated by heat, so is the action of the lungs; whence an advantage of inspiration is, the cooling of the blood by the application of cold to that portion of it which is passing through the lungs, as well as by expiration, to carry off a portion of redundant heat along with the matter perspired. 3. Lastly, by the action of the parts subservient to respiration, the progress of the aliment through the stomach, &c. as also of the feces through the intestines, is facilitated and hastened.

RESTORATIVES (from *restoro*, to revive); medicines suited to restore lost strength; but the term is commonly applied to those which restore loss of strength depending upon the waste of fluids, and in that sense nearly the same with the nutrientia. Restoratives differ not much from agglutinant corroboratives, and their manner of operation, or nearly so, may be accounted for in the same way. Cordials are known by the name of restoratives.

RESTY, or RESTIVE, a term used, in respect of a horse, when he will go neither backwards nor forwards; but resists the commands of his rider.

RESUSCITATION, the reviving, or raising again to a state of action, an animal whose vital powers have been suspended by any accident, as by hanging, suffocation, drowning, &c. Mr. FERON observes, that the too common practice of leaving a mare in places unsuitable for her foaling, or exposing her in a field amongst other horses, frequently produces fatal accidents. "Every one knows," says he, "that there is not a year passes, but we hear of foals being smothered in ditches, or drowned in ponds or rivulets, after having been unmercifully bruised, or their bones fractured, &c."

Those who advert to the various causes that may suspend life, will find that too hasty a decision as to its final extinction is by no means to be commended. Without having previously employed all the resources, that humanity and the veterinary art may suggest, we are by no means justifiable in supposing animals irrecoverable when the accident is recent.

"The first treatment in cases of suspended animation," says Mr. Feron, "whatever may be the cause, should be directed to excite a

susceptibility of stimuli; and next, for restoring susceptibility itself. An advantage so essential must induce us to be particularly careful in the choice and application of stimulant medicines, and not to administer such as are *too powerful at first*, which would indeed excite irritability, but in too violent a degree; and it is also deserving attention, that in the beginning of the process, when susceptibility of irritation is but slight, violent stimulants may be pernicious, by tending to suppress the latent sparks of life. But by a due proportion in the administration of those medicines, and being skilfully managed, the action and reaction of the vital power may be restored, and the system again become susceptible of stimuli.

"It is difficult, and sometimes impossible, to discover, whether or no the vital principle is entirely suppressed. The susceptibility of irritation may be completely suppressed, and the animal, apparently dead, may be insensible to the effect of the strongest stimuli, such as the operation of the knife, and effects of a red hot iron; and yet the vital power may not be extinct. The state of life is manifested from all the symptoms of animation. In this case, irritability is not impeded in its free progressive action; respiration, pulse, and animal heat, are somewhat perceptible."

These and the subsequent remarks of this judicious writer will be sufficient to point out the rashness and impropriety of consigning to the kennel a colt of considerable value, before the following treatment has been fairly and fully tried.

"If a colt is foaled apparently dead, in a place where but little or no assistance can be got, let his tongue be immediately stimulated, rubbing it well with common salt. This stimulant may promote expectoration, and thus admit the external air freely: I have seen several instances of colts, foaled apparently dead, recovering all the symptoms of animation in less than twenty minutes. Instilling a few drops of volatile spirit into the inner corners of the eyes, may likewise operate with good effect; but, should the case prove obstinate, and vitality continue suppressed, the application of the actual cautery must be resorted to, or a red hot iron passed on one or both sides of the chest and under the belly. Cutting the skin in front of the chest, under the belly, and other places where rowels are admissible, is also advisable, as well as rubbing the legs well with oil of turpentine.

"If any signs of life should be perceptible, then it would be an excellent practice to supply

the blood with a greater proportion of oxygen gas, pure or diluted with atmospheric air. Stimulating the nostrils with the vapours of vitriolic acid, or marine acid, will also be a very proper application.

"But a more proper method of immediately stimulating the heart and arteries would be, by transfusing new blood into them. This operation deserves particular attention, in cases of suspended animation. It is performed by injecting the blood that comes out of the artery of a calf or sheep, into the jugular vein of a colt that is apparently dead at the time he is foaled; and is done in the following manner; viz.

"The animal you wish to kill, in order to save the other, must be well secured, and laid as near the other as possible. Then a longitudinal incision must be made in its neck, that you may find the carotid artery, which lies along side, and immediately under, the jugular vein (or vein of the neck); having previously secured two injecting pipes, such as those used for injecting anatomical preparations, at each end of a tube long enough to reach from one animal to the other. One of these pipes must be introduced into the carotid artery of the calf, and the other into the jugular vein of the colt apparently dead; the artery must be well secured with a ligature just under the pipe, until the other pipe is properly fixed into the vein of the colt, or other animal, that we suppose to be in a state of suspended animation only. When the apparatus is ready, you may cut the ligature of the carotid artery of the calf; you will then see the blood, that comes immediately from the heart, running from one animal to the other."

Mr. Feron assures us, that "this operation is almost certain to restore life, if the organic fibres of the heart and arteries can be at all affected by stimulants," and we confess there appears to be a considerable degree of probability in the attempt.

RETAIN, in the manege, or what is called *holding in*. This is said of mares that conceive, and *hold* after covering.

RETE MIRABILE, a name for the congeries of blood-vessels in the brain. See BRAIN and QUADRUPED.

RETE MUCOSUM, the true skin on its whole surface is covered with two lamellæ, one is the *rete mucosum*, the other is the *cuticula*. The *rete mucosum* is the principal seat of colour in man. In Europeans it is transparent, in mulattoes it is brown, and in negroes it is black.

RETENTION, and RETENTIVE FACULTY,



both externally and internally may be proper. "Do not the inhabitants of Bath and Buxton," says he, "extend the use of their warm baths to their rheumatic horses?" No doubt, such a remedy would be extremely desirable.

Many of the symptoms described under other appellations deserve to be considered and treated as rheumatism. The effects of cold, violent exercise, &c. it is probable are of this sort. See the articles COLD, EXERCISE, FOUNDER, &c.

**RHIGOS** (ριγος), rigor. When any sensible part of the body is affected with spasms, all the other parts are readily drawn into consent with it, hence the *horror* and *rigor* on the surface of the body, the coldness, &c. Irritation in the primæ viæ is often the cause.

**RHINANTHUS**, rattle, or *louse-wort*, a genus in Linnæus's botany. He enumerates seven species.

**RHOCHMOS**, snoring, or snorting through the fauces.

**RHOMBOIDES** (ρομβοειδης), a muscle thus called from its figure, which lies under the cucularis, and arises from the two inferior spines of the neck, and four superior of the back; and is inserted fleshy into the whole basis of the scapula, which is drawn backwards. This muscle in the horse is shewn in Plate XIX. See the description of parts "*in the neck*," under the article MUSCLES. See also Plate II.

**RHUBARB**, **RHABBARBARUM** (from *Rha*, and *barbarus*, wild); also called *rheum*, *rhæum*, or *rhubarbarum*, from its growing on the banks of the river Rha, i. e. Wolga, in the barbarous country of Russia. But the latter Greeks are said to have called it *barbaricum*, because it was brought to Barbara, a country lying on the Sinus Barbaricus, whence it was sent to other countries.

Rhubarb is a plant of the dock kind. It is the *rheum palmatum*, LINN. *foliis palmatis acuminatis scabriusculis, sinu baseos dilatato, petiolis supra obsolete sulcatis margine rotundatis*, AITON, Hort. Kew. The leaves are somewhat heart-shaped; acuminate, and slightly hairy. The root is the only part in use; it is brought from China, and from Siberia, by way of Russia. As good rhubarb plants have been raised in our physic gardens as any that are met with abroad; they grow with vigour in open ground.

Two sorts of the root are met with in our shops, viz. one from Turkey, or perhaps much of this is from Russia; for in the Russian territories the finest rhubarb grows in large quantities. The Turkey rhubarb is generally in flattish pieces, more compact and hard than the Russian; that which grows in Tartary and

Siberia is in round lumps, less weighty than the Chinese, but of a finer grain, and always perforated; the reason of this difference in weight and form is owing to the different methods of curing them. In China they cut their rhubarb into slices, and press it close before drying; in Russia they hang it up to dry without cutting it into slices or pressing it. The Chinese pieces are externally of a yellow colour, and within there is a mixture of bright reddish streaks with the yellow. The second sort is brought from the East Indies; it is in longish pieces, harder, heavier, and more compact, than that from Turkey. Dr. Alston thinks this as good as the Turkey sort. The first sorts must be kept dry, or they grow mouldy, or are destroyed by worms. The Indian rhubarb is not so subject to these inconveniences, and the finer pieces, after being rubbed with the powder of Turkey rhubarb, are sold for it.

Whether rhubarb is of the Turkey or of the East-India kind, choose that which is of a lively colour when cut; firm, and solid, but not hard; that is easily powdered, and when powdered is of a bright yellow colour; that on being chewed imparts to the spittle the same colour, but does not grow slimy whilst in the mouth. To the taste it should be sub-acrid, bitterish, and styptic, and its smell lightly aromatic.

Rhubarb gives out its purgative quality most freely to water; after digesting it with water it becomes inactive, but after several digestions with spirit of wine it retains some of its purgative virtue. The powder purges the human intestines most. The next to it is an infusion in water; the spirituous tincture purges the least, but has more of the aroma and of the astringency of this root. The watery infusion, when reduced to an extract, has its virtue much diminished; the spirituous loses less, so that 3fs. of it will operate moderately, but not more so than an equal quantity of the powder.

The London College directs three tinctures, two of which are spirituous, and one vinous; but the powdered root alone, is exhibited for veterinary purposes. It must not be concealed, however, notwithstanding the encomiums which some late writers have bestowed on it, that this is among the substances proscribed at the Veterinary College, as almost absolutely inert, and incapable of any important effect on the bowels of the horse. It may be well to ascertain this point by farther experiments.

**RIBS**. See BONES: also Plates V. XXIV. and XXVIII. The muscles which elevate the ribs are shewn in Plate XI. See the description under HORSE.

**RICINUS**, the *Ricinus communis* LINN. The oil of the seed is called castor-oil. This plant, called also *negro oil-bush*, grows spontaneously in most of the West-India islands. The seed is generally less than a common horse-bean, ovate, compressed on one side, covered with a brittle shell, speckled with brown and yellow, containing a white kernel inclosed in a white membrane; when fresh, bitterish, and, after some time, exciting a mild sense of heat. This shell is said to have a strong degree of acrimony not discoverable by the taste, to which it seems insipid, but by its effects on other parts.

These seeds contain a large quantity of oil; which is obtained either by boiling them after being bruised in water, and skimming off the oil which rises to the surface, or by expression. That obtained by the former process loses its sweetness from the heat, is whiter, less purgative, and disposed to grow rancid sooner. That oil is the best which is thick, viscid, greenish, somewhat opaque, almost insipid, or sweet, leaving no sensation of acrimony in the throat; that is not so good which is very white, transparent, and of a saffron colour.

This oil is one of the most agreeable purgatives which can be employed in human diseases, and several of our modern veterinarians have employed it in those of the horse.

**RICINUS** (*quasi* *ῥικινος*, a dog's nose, because they stick to dog's noses). The tick or tyke, a reptile which infests dogs. This term is also given to the spurge-laurel, whose seeds resemble the tick.

**RIDGES**, or **WRINKLES**, of a horse's mouth, are the risings of the flesh in the roof of a horse's mouth, which run across from one side of the jaw to the other, having interjacent furrows. Upon the third or fourth ridge, the stroke is given with the horn, in order to bleed a horse in the mouth. See **HORN**.

**RIDING**. See **HORSEMANSHIP**.

**RIFTS**, **CLEFTS**, or **CRACKS**. See **CHOPS**, **CRACKS**, &c.

**RIG**, a name given a horse that has had one of his stones taken away, and yet has got a colt.

**RIGOR**. See **RHIGES**.

**RIGIDITY**, is said of the solids of the body, when being stiff or unpliant they cannot readily perform their respective offices. This is to be remedied by fomentations, bathing, &c. but a fibre is then said to be rigid, when its parts are so strongly coherent together, as not to yield to that action of the fluids which ought to overcome their resistance, in order to the preservation of health.

**RIMA**, any fissure or chink. The term is

applied to several parts of the body that have a resemblance to it in shape: as the *rima pudendi* is the vulva; and *rima laryngis* the aperture of the larynx, &c.

**RIMULA**, a little chink or fissure. This is only a diminutive of the foregoing, and applied to lesser parts of the same kind; as that small aperture between the *arytenoid cartilage* commonly called the *glottis*.

**RING-BONE**, a large swelling on the lower part of the pastern, which generally reaches half way round the fore-part, and, from its resemblance to a ring, has this denomination. A ring-bone has an affinity to a bone-spavin; and, for the most part, proceeds from the same cause. The external cause of a ring-bone is often a strain in the pastern, from hard riding on dry roads; or owing to the pastern having been wrung in deep clayey roads, either in travelling or at grass. These often produce ring-bones. Yet some horses are naturally subject to ring-bones, especially those that are large and bony about the pasterns. When a ring-bone appears upon a clean-limbed horse, it is seldom so dangerous as when it happens to horses that have large bones, and are fleshy in those parts; for when the swelling is removed, the stiffness often remains.

A ring-bone is always easier to cure when it appears distinct round the pastern, than when it spreads downward towards the coronet; for then it is apt to affect the coffin-joint, if it does not derive its origin from some strain or defect in that joint originally; in which case the cure will be uncertain, and sometimes impracticable, when a callosity is produced under the round ligament that covers that joint, and even when it happens more externally; it proves also dangerous, when it unites with or spreads the ligamentous substance that joins the hoof to the flesh; it is apt to turn to a quittor, and in the end to form an ulcer under the hoof. A ring-bone that rises on the pastern is easily cured when it does not run down towards the coronet.

Gibson says, the ring-bones that appear on colts and young horses will often insensibly wear off of themselves, without the help of any application; but when the substance remains, there needs no other remedy besides blistering, unless when, by long continuance, it is grown to an obstinate hardness, and then it may require both blistering and firing. The swelling may proceed only from the tendons, which sometimes is not easy to be distinguished from a true ring-bone, except only that a true ring-bone is less painful, unless it proceed from the coffin-joint. In this case, blistering alone generally



proves successful ; and it is to be renewed two or three times, according to the urgency of the symptoms. But in a true ring-bone, where the substance is hard, like a piece of flint, and altogether insensible, and without pain, firing is the only thing to remove it.

Gibson, in order to fire a ring-bone successfully, advises the operation to be performed with a thinner instrument than the common one ; and that the lines or razes be made not above a quarter of an inch distant, crossing them obliquely somewhat like a chain. He directs us to apply a mild blister over all, and when quite dried up, and before the hair is grown, to lay on a charge of yellow rosin and bees-wax, &c. melted together and spread over the pattern-joint, covering the whole with flocks, or with the stuffings of an old saddle. As soon as the horse has rested two or three days in the house, he advises us to turn him out to graze in some dry, smooth pasture. The same method, he says, is to be followed when the ring-bone rises towards the coronet, or the coffin-joint.

RIPENERS, or drawers, as they are vulgarly called ; such medicines externally applied as by their stimulus and warmth promote the formation of matter in an abscess ; such as camphorated ointment, turpentine, poultices composed of active ingredients, and some liniments.

RIVET, the extremity of the nail that rests on the horn in shoeing a horse. See SHOE, NAIL, &c.

ROAN-COLOUR OF A HORSE. See the article COLOUR.

ROARING, a disease little noticed by writers, though well known to jockeys and horse-dealers. It takes its name from a singular noise which the horse makes in breathing whenever he is put into a brisk motion. Mr. RYDING says, it is owing to lymph being extravasated, and coagulating on the inside of the trachea, or wind-pipe, and by that means obstructing respiration. If this be the case, it bears a near resemblance to the disease called the *croup* in children.

"The principal cause," he adds, "is sudden, or long-continued and violent exercise. In its incipient stage, blistering the whole length of the wind-pipe may be of use ; but when the disease has continued a length of time, it becomes incurable."

It usually accompanies broken-wind in horses, or at least is the fore-runner of it.

ROB, is an ancient term for inspissated vegetable juices, as the rob of elder ; but this appellation is now laid aside.

ROBORANTIA (from *robur*, strength) ; such medicines as strengthen the parts, and give new vigour to the constitution.

ROCHE, an epithet applied to the rock alum, the term in French signifying *rock*.

RODATIO, too short eye-lashes.

RONCHUS (*ρογχος*), snorting or snoring through the fauces.

ROOT, that part of a vegetable, whose office it is to draw up nourishment, and which also produces the herb with its fructification : it consists of two parts, viz. the *caudex*, stock or body of the root ; and *radicula*, radicle or little root. The *caudex* both ascends and descends ; the ascending *caudex* raises itself gradually above ground, serving often as a trunk, and produces the herb or plant. The descending *caudex* strikes gradually downwards into the ground, and puts forth radicles. It has been distinguished, according to its various structures, into perpendicular, horizontal, simple, ramose or branching, fusiform or spindle-shaped, tuberous or knotted, repent or creeping, fibrous, and premorse or bitten off. The radicle is the fibrous part of the root, which terminates the descending *caudex*, and enables the root to draw nourishment for the support of the vegetable. Roots are farther distinguished into bulbous, consisting of a bulb ; articulate or jointed ; and globose or globe-shaped. The fruit, leaves, and roots, of plants, have frequently very different medical properties, and it not uncommonly is the case that one only of these forms a medical article, whilst the rest is rejected.

RORIFEROUS DUCTS, dew-dropping pipes : the *thoracic duct* is thus called by some of the old writers from its slow manner of conveying, and as it were instilling, the chyle into the common stream of the blood. The lymphatics also, and other vessels, conveying slowly small quantities of fluid, are thus called by Billius, Bartholine, and some others.

ROSA, the rose-tree. A genus in Linnæus's botany. He enumerates twenty-one species. The college of physicians have directed the petals or flower-leaves of the *Rosa damascena*, or Damask-rose, *Rosa centifolia*, LINN. and of the *Rosa rubra*, or Red Rose, *Rosa gallica*, LINN. Its properties are too insignificant for veterinary purposes, though Gibson includes it in his *Farrier's Dispensatory*.

ROSEMARY, the *Rorismarinus officinalis* LINN. This plant is a native of Spain, Italy, and the southern parts of France, where it grows in great abundance upon dry gravelly grounds ; in the like soils it thrives best with us, and likewise proves stronger in smell, than when produced in moist rich ones. This indeed obtains in almost all the aromatic plants.

Rosemary has a fragrant smell, and a warm

pungent bitterish taste, approaching to those of lavender. The leaves and tender tops are strongest; next to these the cup of the flower; the flowers themselves are considerably the weakest, but most pleasant. Aqueous liquors extract great share of the virtues of rosemary leaves by infusion, and elevate them in distillation: along with the water arises a considerable quantity of essential oil, of an agreeable strong penetrating smell. Pure spirit extracts in great perfection the whole aromatic flavour of the rosemary, and elevates very little of it in distillation; hence the resinous mass left upon abstracting the spirit, proves an elegant aromatic, very rich in the peculiar qualities of the plant. The flowers of rosemary give over great part of their flavour in distillation with pure spirit; by watery liquors, their fragrance is much injured; by heating, destroyed.

Rosemary is considered as a stimulant and corroborant of the nervous system, and has been recommended as such by Gibbon and others.

**ROSTRIFORM PROCESS** (from *rostrum*, a beak, and *forma*, shape), the same as *coracoid*, which see.

**ROSTRUM**, is used to express the pipe which conveys the distilling liquor into its receiver, in the common alembics; also for crooked scissars, which furgeous in some cases make use of for the dilatation of wounds.

**ROT**, a well-known disease in sheep and other domestic animals, but principally in the former. Though well known, however, it is, unfortunately, by no means well understood; nor do writers on the subject agree as to its causes. The latest, and by far the most scientific, writer on the subject, is Dr. Harrison, from whose publication we draw the following history of the rot in sheep.

"When in warm, sultry, and rainy weather, sheep that are grazing on low and moist lands, feed rapidly, and some of them die suddenly, there is reason to fear that they have contracted the rot. This suspicion will be further increased, if a few weeks afterwards the sheep begin to shrink, and become flaccid in their loins. By pressure about the hips at this time, a crackling is sometimes perceptible. Now, or soon afterwards, the countenance looks pale, and upon parting the fleece, the skin is found to have exchanged its vermilion tint for a pale red; and the wool is easily separated from the pelt. As the disorder advances, the skin becomes dappled with yellow, or black spots. About this time, the eyes lose their lustre, and become white and pearly, from the red vessels of the tunica adnata, and eye-lids, being con-

tracted or entirely obliterated. To this succeeds debility and emaciation, which increase continually till the sheep die; or else ascites, and perhaps general dropsy, supervene, before the fatal termination. These symptoms are rendered more severe, by an obstinate purging, which comes on at an uncertain period of the disorder. In the progress of the complaint, sheep become what the graziers call *chokered*, i. e. affected with a swelling under the chin, which proceeds from a fluid contained in the cellular membrane, under the throat.

"In five or six days after contracting the rot, the thin edge of the small lobe of the liver becomes of a transparent white or bluish colour, and this spreads along the upper and lower sides, according to the severity of the complaint. Sometimes it does not extend more than an inch from the margin. In severe cases, the whole peritoneum investing the liver is diseased; and then it commonly assumes an opaque colour, interspersed with dark red lines or patches. The upper part of the liver is sometimes speckled like the body of a toad, to which it is said to bear a striking resemblance: round the ductus communis choledocus, and hepatic vessels; a jelly-like matter is deposited, which varies according to the severity of the attack, from a tablespoonful, or less, to five or six times that quantity. Upon boiling, the liver loses its firmness, and separates into small pieces in the water, or remains soft and flaccid."

The doctor here observes, that graziers and butchers having remarked that sheep are much disposed to feed during the first three or four weeks after being tainted, avail themselves of this circumstance, very commonly, to increase their profits. "When the first stage is over," continues he, "flukes begin to appear in the pori biliarii, the ductus communis choledocus, and in the gall-bladder. At first, the number of these creatures is small; but as the disease advances, they increase, and before death are often very numerous. In the last part of the complaint, they are sometimes to be found in the stomach, as well as in the intestines and liver. This, like the visceral disorders of the human body, may terminate in resolution, effusion, suppuration, or schirrus.

1st, "The complaint is said to terminate in resolution, when the inflammatory action goes off, without destroying the state and texture of the parts. However, I am strongly inclined to believe, that every considerable inflammation in the human body, and in other animals, although it ends in resolution, leaves behind it some remains, which may be discovered by an



experienced anatomist. When the vessels are thrown into inflammatory action for a few days only, effusion commonly takes place, and the coats become thicker, and assume a buffy colour. These changes in the sanguinary system often continue through life, and lay the foundation of many chronic and incurable disorders. Sheep that recover from the rot, exhibit very different appearances after death, according to the severity of the attack; but the taint is seldom or never entirely removed." The liver of an old ewe, that lately died fat, and contained fourteen pounds of fuet in her body, had the following appearances. "The back part of the small lobe was dappled with whitish spots; the coats of the ductus communis and pori biliarii were considerably thickened, and more solid than usual. In colour, they resembled the human aorta in old people, and were full of flukes: in other respects, the liver appeared to be sound and natural. The butcher asserted, that the variegated appearance and alteration in the ducts, were occasioned by a slight taint of long standing, which had not been considerable enough to disorder the economy, or impair the health of the animal, sufficiently to prevent its feeding.

2dly, "When sheep die suddenly in the first stage of the disorder, an effusion of serum, or of wheyish coloured fluid, may be commonly discovered, in the cavity of the abdomen, and then the peritoneum surrounding the liver is generally covered with a membrane or coat of coagulable lymph. This form of the rot has been frequently confounded with the resp or red-water, though it differs from the latter disorder, in the colour of the effused liquid, in being much less disposed to putrefaction, and in several other particulars.

3dly, "Abscesses in the liver exhibit another termination of this malady. They are seldom considerable enough to kill immediately; but, in consequence of the absorption of purulent matter from them, the sheep frequently waste away, and die hectic or dropsical. When the collections are small, sheep will recover sufficiently to bear lambs, for three or four seasons, and afterwards become tolerable mutton.

4thly, "The most common termination is in schirri, or what the shepherds call knots in the liver. The whole substance of this important viscus has been found so full of small roundish lumps, or schirrous bodies, that it was difficult to find any sound part in it. The first attack is unfortunately so very insidious, that the disorder is scarcely observable, before the animal begins to waste and lose flesh. In

this advanced state, it is said to labour under the rot or *pourriture*, from overlooking the commencement of the disorder.

"Hydatids are observed to affect schirrous and purulent livers more frequently than others. When livers are much diseased, the butchers carefully conceal them from the public eye. To me, it is always matter of surprise, to find the mutton saleable in these severe cases. It shews, in an extraordinary manner, the accommodating power of living matter, which is able to maintain life, and increase corpulence, under such unfavourable circumstances. Shepherds and breeders, who make it a general rule to kill every sheep that becomes indisposed, from an opinion that very few of them ever recover from any illness, would do well to examine the livers and other viscera of slaughtered sheep. By such a practice, they would soon be convinced, that sheep are able to endure a great deal." Dr. Harrison concludes his history of the rot with expressing his firm persuasion, that the uniform mortality among these animals proceeds rather from ignorance, or erroneous treatment, than from the inevitable tendency of their disorders. Reversing the order which the author observes, we shall now state his opinion of the cause of this inveterate malady.

"The disorder," says he, "has been imputed,

1st, "To a vitiated dew.

2dly, "To a gruff, which adheres to the grafts after wet weather, or the overflowing of running water.

3dly, "To the luxuriant and quick growth of plants, in hot, moist seasons.

4thly, "To grazing upon certain herbs.

5thly, "To *fasciola hepatica*, or their ova, being introduced into the stomachs of animals, by feeding on swampy and low grounds in moist weather.

6thly, "It has been called the *sheep-pox*, by professor Vibourg, of the veterinary college at Copenhagen; but this is not properly a cause of the rot.

7thly, "It is ascribed, by Daubenton, to poor diet, and drinking too much water."

To each of these Dr. Harrison opposes such reasoning as he thinks sufficient to demonstrate their fallacy, and concludes,

8thly, "It seems to be occasioned by *poisonous effluvia*, which, under certain circumstances, are emitted from *marshy soils*."

We must, of necessity, confine ourselves to the latter, in support of which the ingenious author offers the following strong, we had almost said decisive, facts.

" Mr. Harrifon refides upon a confiderable inheritance, which was formerly tenanted by his father and grandfather. It confifts of high and low lands of a loamy and tenacious nature. While a brook which runs through the farm remains overflowed, and the water continues upon the adjoining flat grounds, his fheep never fuffer any inconvenience, though they are frequently obliged to wade for their provifions. As foon as the flood is fubfided, the fheep can at any time be tainted in a quarter of an hour, while the land retains its moiſture, and the weather is hot and fultry. The butchers are fo well acquainted with the importance of this fact, that when my friend has difpofed of any fat fheep, they are uſually turned upon his rotten ground to make them thrive faſter.

" Mr. Harrifon has, by judicious management, laid the greateſt part of his farm completely dry, and is now little troubled with the rot, unleſs when he wiſhes to give it to ſome particular animals. His neighbours, who have been leſs provident, are ſtill ſevere ſufferers by it, nor are their miſfortunes confined to fheep alone. Pigs, cows, aſſes, horſes, poultry, hares, and rabbits, become rotten in this lordſhip, and have flukes in their livers.

" Many years ſince the grandfather of this gentleman removed ninety fheep, from a confiderable diſtance, to his own refidence. On coming near to a bridge, which is thrown over the Barling's river, one of the drove fell into a ditch, and fractured its fore-leg. The ſhepherd immediately took it in his arms to a neighbouring houſe, and replaced the limb. During this time, which did not occupy more than one hour, the remainder were left to graze in the ditches, and lane. The flock were then driven home, and in a month afterwards, the other fheep joined its companions. The ſhepherd ſoon diſcovered that all had contracted the rot, except the lame fheep; and as they were never ſeparated upon any other occaſion, it is reaſonable to conclude, that the diſorder was acquired by feeding in the road and ditch bottoms.

" A Lincolnſhire farmer purchaſed ſome turnips in Nottinghamſhire, upon which he intended to winter a flock of ſheep. The firſt diviſion, conſiſting of about forty, were detained one night at a village near to the place formerly alluded to, by the overflowing of the Barling's Eau, and were put upon a piece of flat land, which leads to the river. The water had not returned to its former channel more than a day or two. Every one of the forty ſheep became rotten; whereas the other diviſion, which ſtop-

ped no-where by the way, eſcaped the diſorder, and remained well. Sheep were formerly admitted into ſome adjoining paſtures, in travelling to and from the neighbouring fairs and markets; but ſo many of them contracted the rot, that, for ſome time paſt, the graziers in this country will not ſuffer their flocks to ſtop for a moment near the village. I have repeatedly examined the ſuſpected ditches and paſtures, but never obſerved either flukes, or any of the plants, to which the rot has been attributed; though I muſt candidly acknowledge, that I ought to have fought for them with more care and attention. Theſe ditches communicate with a rivulet, which frequently overflows its banks, and the encloſures are then deluged with water. The ſoil conſiſts chiefly of loam or clay, and the ſurface is ſo flat and level on both ſides of the river, that, for want of proper deſcent, the water is a long time detained upon the ground. I am credibly informed, that in this place the rot affects ſwine, hares, and rabbits, as well as ſheep.

" I have likewiſe been informed, by Mr. David Wright, that a few years ſince, as a drove of ſheep were paſſing through a long lane in the pariſh of Irby, one of them, being weary, fell down in the middle of the road. The others were permitted to range at large, till their companion was able to travel. They were then driven altogether into a paſture, and it was ſoon diſcovered that only the tired ſheep had eſcaped the rot. As the flock had never been ſeparated upon any occaſion, we are entitled to conclude that the diſorder was contracted while the tired animal remained upon the road."

From theſe and other caſes the doctor thinks himſelf juſtified in attributing the rot in ſheep, and other animals, to *paludal effluvia*; but with reſpect to their nature and conſtitution, he acknowledges it is very difficult to form any rational opinion, as they have hitherto eluded the moſt ſubtile and delicate enquiries. His ſuggeſtions on the prevention of the rot we ſhall notice very briefly.

" Where neceſſity requires the paſtorage of moiſt grounds in ſummer or autumn, the ſhepherd ought carefully to remove his flock into a dry ſituation before the evening, and provide them with corn, and good hay, or green food.

" A conſiderable farmer of Bohemia kept his ſheep ſound in the wet and fatal year 1769, by feeding them every night, when turned under a ſhed, or into ſtables, with haſhed ſtraw; and by eating it greedily, they were all ſaved. By this judicious practice, the ſheep



were removed to sleep in better air, as well as preserved in a more vigorous state of body. Sir John Pringle informs us, that persons have maintained themselves in good health, during sickly seasons, by inhabiting the upper stories of their houses; and I have reason to believe, that merely by confining sheep on high grounds through the night, they have escaped the rot.

"After the dew is exhaled by the sun's heat, sheep may be suffered to range in moist and swampy places, with less danger, because the miasmata, which are formed in the night, and remain entangled among the grass, or float in the lower part of the atmosphere, are chiefly dissipated with the dew. Therefore, unless they be very copiously produced in the day time, or are unusually virulent, they will not be sufficiently concentrated to do much injury to healthy sheep. While at rest and asleep, the operations of the system are more feebly performed, and then sheep are peculiarly exposed to diseased actions. By conforming to these regulations, I have known one flock escape entirely, while others have suffered materially in the same open field.

"It is confidently asserted, that decoctions of bitter herbs, with salt, have frequently preserved sheep from the rot. Salt is supposed to constitute a part of *Fleet's* celebrated nostrum: and we know, that bitters are deservedly recommended to prevent intermittents, the dysentery, and other disorders, which originate from exhalations.

"In Oxfordshire, Dr. Lower has frequently known six or seven spoonfuls of strong brine and stale urine, with foot steeped in it, to be given with great success. This is done at spring and fall of the year, when the dew is counted most dangerous. This course of physic is continued eight or ten days, or till the sheep eat their meat heartily; and if they were taken in time, there seldom died any in a whole flock. For the same purpose, Ellis recommends the following medicine in his *Practical Husbandry*.

"Take a peck or more of malt, and mash it as though you would brew it into ale or beer, and make eleven or twelve gallons of liquor; then boil in it a quantity of shepherd's purse, comfrey, sage, plantain, penny-royal, wormwood, and bloodwort: add yeast, and afterwards salt to the mixture: then turn the liquor into a vessel. After April comes in, give seven or eight spoonfuls to every sheep, once in the week, if the weather be wet, and if dry, not so often."

The whole of Dr. Harrison's remarks are

well worth consideration. We shall conclude with the following hints.—When the shepherd determines to examine the eyes of a sheep, which ought to be done frequently, he should place it between his thighs, and hold the head with both hands. He then proceeds to raise the upper and depress the under eye-lid; by which means the blood-vessels of the tunica albuginea are brought into view. When they are red, and in great numbers, the sheep is supposed to be in good health. The caruncula lacrymalis, and inner surface of the eyelids, should be as red as the vessels on the eye-ball. If they are pale, and the veins are in small quantities, and faint-coloured, or livid, the sheep is in a debilitated state, or afflicted with the rot. In all cases where the blood-vessels have entirely disappeared, the mutton is bad. By frequently examining the eyes in dangerous seasons, shepherds might always discover the rot before their sheep begin to shrink, and, consequently, in time to prevent any material injury to their profits. Where the demand is considerable, and the market is not far distant, the grazier may always turn the rot to his advantage, by keeping the tainted sheep while they continue to feed, and taking care to kill them immediately after they cease to thrive.

ROTANG, prickly calamus. A species of *Calamus*.

ROTATOR (from *roto*, to turn). In the human skeleton, *rotator minoris* is the lesser trochanter (see BONES), and the *rotator majoris* the greater trochanter. The term *rotator natis* also denotes the great trochanter.

ROTRON'S SOLVENT. Crude antimony mixed with three parts of nitre, and exposed to the fire in a crucible, loses all its sulphur by the action of the nitre. The mixture enters into a paste-like fusion; it is then poured on a marble, pulverised, and kept in a bottle.

ROTULA, in anatomy, the *patella*. In pharmacy it signifies a troche.

ROTUNDA LIGAMENTA. The round ligaments. On each side of the womb, in the human female, there is one.

ROTUNDUS, one of the muscles of the *radius* in the human subject, thus called from its round shape. It arises fleshy from the internal extubérance of the *humerus*, and goes obliquely to be inserted into the middle and external parts of the *radius*, with others helping to turn the palm of the hand upwards.

ROUND, or VOLTE, in the manege, is a circular head. See the article VOLTE. To round a horse, or make him round, is a general expression for all sorts of manege upon rounds.

To round a horse upon a trot or gallop, is to make him carry his shoulders and haunches compactly, or roundly, upon a greater or smaller circle, without traversing or bearing to one side.

ROUSSIN, in the manege, a name for a strong well-knit horse, such as are commonly brought from Germany and Holland.

ROWEL, a kind of rude seton, of which the following judicious account is given by Mr. Clark, of Edinburgh.

"Rowels, for horses," says he, "answer the same purpose as issues in the human body. The method of introducing them is by making an incision through the skin, about three-eighths of an inch long, and then separating the skin from the flesh with the finger, or with a blunt horn, all round the orifice, as far as the finger will easily reach, then introducing a piece of leather, very thin, shaped round, about the size of a crown-piece, having a large round hole in the middle of it. Previous to introducing the leather, it should be covered with lint or tow, and dipped in some digestive ointment; a pledget of tow, dipped in the same ointment, should likewise be put in the orifice, in order to keep out the external air. The parts around it soon swell, and this is followed with a plentiful discharge from the orifice, of yellowish serum or lymph; and in two or three days at most there discharges a thick gross white matter: the rowel is then said to suppurate.

"These artificial vents act by *revulsion* or *derivation*; and hence they become of great use in many cases, as they empty the surrounding vessels by a regular slow discharge of their contents, and are even of great service when there is a redundancy or fulness of humours in general, which may require a gradual discharge, in preference to greater evacuations by purging medicines, &c. Rowels should be placed (especially in some particular cases) as near the affected part as possible; and, at all times, they ought to have a depending orifice, in order to admit of a free discharge of the matter that may be contained in them.

"The parts in which they may be most conveniently inserted, and where they are found to answer the purpose best, are the belly, inside of the thighs, the breast, and outside of the shoulders and hips. They are sometimes, but very injudiciously, put in between the jaw-bones under the root of the tongue, where they never come to a proper suppuration, on account of the constant motion of the parts in eating,

&c. neither do they answer any good purpose from being placed in that situation. In some disorders it is found necessary to put in several of them at once, in order to make a sudden determination from the parts affected; but this should be regulated by the horse's age and strength, and by the circumstances that require their use."

Mr. Clark here adverts to the possibility of their misapplication.—"But," says he, "though rowels are found very beneficial in some cases, yet, like a number of other operations common to horses, they sometimes, by the improper use of them, become hurtful to the constitution, and, in some diseases, they frequently, instead of suppurating, become gangrenous. Hence, the cure proves worse than the disease they were intended to remove. Thus, in violent fevers, where they are frequently very injudiciously applied, they never suppurate properly. Whether this proceeds from the quickness of the pulse, together with the violent rapidity with which the fluids in general are then carried through the vessels, or from the violent agitation in which the whole system is thrown, it is difficult to determine; but experience confirms the fact. In such cases, the surrounding parts, where the rowel is placed, seldom or never swell (as in the ordinary course, when they suppurate properly), but appear dry, or much in the same state as when they were first put in; there is little or no discharge from the orifice, and the little that does come is thin, ichorous, and bloody. In such cases, they ought to be taken out immediately, and the parts well fomented with a strong infusion of chamomile, or an emollient poultice applied, if it can be properly fixed, and frequently repeated. At intervals, the parts ought likewise to be bathed with ardent spirits, as that of wine, turpentine, &c. covering the parts from the external air; and, provided there be no fever at the time, two or three ounces of Peruvian bark may be given through the day, either made into balls, or given in a liquid; and this course should be continued till the threatening symptoms are removed."

Gibson gives an instance of cancer being produced by a rowel placed near the glandular parts in a horse, and which proved fatal to the animal. See CANCER.

The practice of rowelling, however, Mr. Clark considers of great use "in carrying off rheums, or defluxions from the eyes; in extensive swellings of the glands, &c. about the throat and jaws, which threaten a suffocation;



or when the head seems particularly affected, as in the vertigo or staggers, apoplexy, &c.; in recent lameness; swellings of the legs and heels, attended with a discharge of thin ichorous matter, &c.; in large and sudden swellings in any part of the body; or when extravasations of the fluids have taken place, from blows, bruises, &c.; or when a horse has had a severe fall, &c.; and in a variety of other cases," which he apprehends will occur to the judicious practitioner, without the necessity of further injunctions on the subject.

If we may be allowed to differ from so experienced a practitioner, we would venture to call in question the propriety of bathing, with stimulating liquids, the parts which *swell without suppurating*. To say nothing of its being inconsistent with the emollient treatment by fomentation and poultices, we apprehend the want of a kindly discharge to arise, in such cases, from the degree of inflammation in the part having advanced beyond the suppurative point. Else why the benefit which almost invariably results from withdrawing the rowel, and employing the common means of abating inflammation? We submit, therefore, to our veterinary brethren, whether, at least, the application of spirit of turpentine, which is *extremely pungent*, to the skin of a horse, should not rather be dispensed with?

ROYENI, prickly-seeded hemlock, a species of *Conium*.

RUBEFACIENTS. Those epispastics or attrahents are thus called, which excite heat with a degree of inflammation without vesication.

RUBEOLA, the measles. Hogs are subject to a cutaneous disease called the *measles*.

RUBIA, Madder, a genus in Linnæus's botany. He enumerates five species. The college have retained the root of the rubia tinctorum in their pharmacopœia.

RUBICAN colour of a horse, is a bay, sorrel, or black, with a light grey or white upon the flanks, but so that this grey or white is not predominant there.

RUDDLE, a species of iron-stone, of a red colour. Sheep are marked on the back by their owners with this substance.

RUE, the *Ruta graveolens* LINN. Broad-leaved rue is a small shrubby plant, met with in gardens, where it flowers in June, and holds its green leaves all the winter. We frequently find in the markets a narrow-leaved sort, which is cultivated by some in preference to the other, because its leaves appear variegated, during the winter, with white streaks.

Rue has a strong, ungrateful smell, and a bitterish, penetrating taste. The leaves, when in full vigour, are extremely acrid, inasmuch as to inflame and blister the skin, if much handled. With regard to its medicinal virtues, the character given of it in the dispensatories is, that "they are powerfully stimulating, attenuating, and detergent; and hence, in cold phlegmatic habits, they quicken the circulation, dissolve tenacious juices, open obstructions of the excretory glands, and promote the fluid secretions." The writers on the materia medica in general have entertained a very high opinion of the virtues of this plant. Boerhaave is full of its praises, particularly of the essential oil, and the distilled water colobated or re-distilled several times from fresh parcels of the herb. As a veterinary remedy it is also extolled by Gibson, who says it is "of very general use." When bruised and thrust into a horse's ears, he says, it will remove a fit of the staggers.

RUMEX, Dock; a genus in Linnæus's botany. He enumerates thirty-one species. The two most used in medicine, are the *Oxylapathum* and the *Hydrolapathum*. These are considered as alterant and laxative.

RUMINANT, a general name for all those animals that chew the cud. See QUADRUPED and CUD.

"The retrograde motion of the œsophagus in ruminating cattle," says Mr. FERON, "such as cows, sheep, goats, &c. renders them capable of bringing up the softened grafs from their first stomach. But when these animals fill themselves too full of clover, or of wet grafs, or of some other young vegetables, which are liable to run into fermentation, the stomach becomes distended with air, and death frequently ensues.

"The remedy for this is, to give a pint of any spirituous liquor, such as gin, whisky, brandy, &c. mixed with an equal quantity of water; or half a pint of sweet spirit of nitre, diluted with water, is preferable to any other liquor: half of the above quantity will be sufficient for a sheep.

"But should the belly swell to such an excess as to endanger the animal's life, in such a case the air must be evacuated immediately, by making a puncture through the flank, deep enough to enter one of the stomachs, which lies immediately under it; then keep the animal for a few days on low diet."

A tube made of leather, or some other flexible material, and encircled by a spiral brass wire, might easily be had for the immediate relief of cattle that are hoven, and the most ignorant

peasant could scarcely fail in the application of it.

**RUN**, in the manege. To *run* a horse is to put him to his utmost speed. Some use the word running for any kind of gallop.

**RUNNING-THRUSH**, or **FRUSH**. See **THRUSH**.

**RUNNING-HORSE**. See **RACE-HORSE**.

**RUPTURE**, an injury done to a part by violence. It is most properly spoken of a tendon, a ligament, or a cartilage, when they are divided by accident. It then constitutes a species of wound, viz. the lacerated.

**RUPTURE**, or **BURSTENNESS**. See **HERNIA**. Gibson describes this complaint in horses in the following way: "When any part of the guts or caul," says he, "makes its way through the muscles of the lower belly, it is called a rupture; when any part of the guts falls into the scrotum, it is said to be a complete rupture; when at the navel, it is called an umbilical rupture. I once saw a fine Spanish stone horse with a complete rupture; the swelling was so extremely large, that the gut extended the scrotum down to his hock. This circumstance rendered the cure in a great measure impracticable. It was the only one of the kind I ever saw, and, in fact, it is a case that must seldom happen, the position of a horse's body being such, as cannot so easily expose him to ruptures into the scrotum, as men are whose posture is erect. I also have seen a gelding, where probably some part of the gut or peritoneum had made its way through the vaginal passage, into the membranous parts of the sheath on the right side; for the omentum or caul seldom reaches so low in a horse, his continual horizontal motion throwing it for the most part forward in wrinkles. The swelling was about the size of a goose's egg, a great part of which might be thrust back with the finger into the cavity of the lower belly, but immediately returned in the manner of a flatulent tumour; and perhaps there might be some portion of air along with it. The cure was never attempted, because it was little or no hindrance to the horse in his business, the swelling being generally fuller when he stood still than when he worked.

"But the most usual ruptures are more upwards, and proceed from strains in working, or from being staked, or gored by bullocks, violent kicks from other horses, very high leaps over gates and hedges; all which things sometimes divide the muscles of the lower belly, and oft-times without piercing or rending the skin, whereby a portion of the intestines, with a part of the peritoneum, and when the wound happens

to be forward, part of the caul may also be lodged where these muscles are separated or divided, and so cause a swelling of a proportion and size equal to the rent made in the part. An instance of this kind I once saw, of a very fine Flanders mare, that had a rupture near her navel of a considerable size, which however did not prevent her working, but as it grew larger it became troublesome; and a very eminent and able surgeon, imagining the substance to be fleshy, and of the nature of a wen, persuaded me to have some trial made of it by excision, for it felt solid as she stood on her legs, which might be owing to part of the caul (which is always rolled forwards in working horses), and along with this, an adventitious growth of flesh, caused by the rending of the muscles and membranes, for when she was thrown upon her back, part of the substance went inwards, and plainly discovered her malady to be a rupture.

"I have known some few instances of umbilical ruptures, that have been caused by rows in the belly, when they have been cut too deep, and perhaps were afterwards neglected. And I knew a horse with a rupture of this kind, perform a journey of several hundred miles, without any great inconvenience, only that he always went sluggish at his first setting out, but more chearfully as he emptied himself. Nevertheless this is a very great defect, and few horses with such infirmities can be long useful. I have seen other ruptures, and these are indeed the most usual, that push out on the sides of the lower belly, where the tunica vaginalis passes through the rings of the muscles, with the spermatic vessels, into the scrotum; and in geldings they seldom reach further than the first ring, which is a little way above the groin, but when they happen on the sides of the flanks, they are then for the most part owing to such accidents as have been above-mentioned. They generally bunch out about the size of a man's fist, and are fullest when the horse stands still in the stable, especially after feeding and watering, and in broken-winded horses they rise and fall with the agitation of the flanks; they are soft, and yield to the pressure of the hand, and in most of them one may feel the vacuity through which the viscera make their way immediately to the skin. But as there is no absolute cure to be expected in such cases, the safest way is to feed moderately, and in small quantities, with small draughts of water, and to use such horses gently. In all beginning ruptures, a fomentation made of oak bark, boiled in equal parts of the sharpest vinegar, and smith's forge water, have been used by



## R U P

farriers for a general application ; for in horses, bandage and trusses of any kind are for the most part impracticable."

This experienced writer concludes his subject with an instance of a very fine gelding, that was killed by a rupture, and in a manner somewhat extraordinary. "This horse," says he, "belonged to a person of distinction, and was abroad with our army in Germany and the Netherlands. He received a hurt while he stood at the piquet along with some other horses ; yet went through his business very well for the space of two years, notwithstanding that accident ; but after a hard day's hunting, was taken with the gripes, of which he died. I was sent for to examine his abdomen, where there was something that surprised all that saw him opened. The ring through which the tunica vaginalis passes, appears plainly in a horse to be formed of the tendinous part of the muscles, has the strength and firmness of a ligament, and resembles a hem or large oil-hole, such as we see in the sails of a ship. One half of this ring was torn off from the flesh, and lay across the orifice, which tied up a duplicature of the colon so tight that nothing could pass through it ; and this was evidently the cause of his sudden death.

"I have briefly related this case," adds he, "in order that those who are employed about

## R Y E

horses may be so far informed in such things as to examine them carefully when the gripes, or any other sudden disorder, seizes them. For if the duplicature of the gut had been forced back into the cavity of the lower belly, when he was first seized, his death might probably have been prevented ; for this rupture seldom appeared larger than a man's fist."

RUSMA, one of the ingredients in a composition used to take off hair. When mixed up into a thin paste with an equal quantity of quick-lime, and a sufficient proportion of water, and rubbed over any hairy part, it will, in the space of a minute or two, appear to loosen the hair by the roots, so that it may be gently stroked off with the hand ; but the fact is, that the hair is *dissolved* by the causticity of the lime only. This method of taking off hair is said to be much practised among the Turks, the Italians, and the French. The *rusma tartarorum* is understood to be a preparation of honey, boiled to a high consistence, and applied in the manner of a plaster ; but the genuine *rusma* is a species of earth found in Turkey, and otherwise called by the name of *susma*. Mention is made of it in the Philosophical Transactions for 1666.

ROUTA, RUE. See RUE.

RYE. See SECALE.

RYE-GRASS (*Wood*), a species of *secale*.

## S.

### S A C

SABULOUS, is that gritty or sandy matter which often washes away by the kidneys, and settles in the urine.

SABINA, SAVIN. See SAVIN.

SACCHARINE, an epithet frequently ascribed to things which have the taste, or other chief qualities, of sugar.

SACCHARUM, sugar. See SUGAR.

SACCHO-LATES, are salts formed by the union of the saccho-lactic acid (see ACIDS), with the different alkaline, earthy, and metallic bases ; there are twenty-four species enumerated

### S A C

in M. Fourcroy's Elements of Natural History and Chemistry.

SACCULI MEDICINALES, bags of ingredients suspended in liquors in making diet-drinks.

SACRA VASA, the vessels which belong to the os sacrum, and the adjacent parts, as the arteries and veins. The arteria sacra goes out at the back part of the aorta, at the bifurcation on each side respectively. This artery in the horse is shewn in Plate XXII. See the description of parts composing "*the lower limbs*," under

the article **MUSCLES**. The vena sacra sometimes proceeds from the bifurcation of the vena cava, at others from the origin of the left iliaca, and accompanies the artery of that name.

**SACCADE**, in the manege, a jerk, more or less violent, given by the horseman to the horse, in pulling or twitching the reins of the bridle, all on a sudden, and with one pull; to correct a horse that lies heavy upon the hand, or obstinately arms himself. This is used to make the horse carry well: though it ought to be used discreetly, and but seldom.

**SACRI NERVI**, five or six branches of nerves, from the spine, pass through the os sacrum, whence their name.

**SACRO-LUMBALIS**, a muscle in the human subject that arises fleshy from the superior part of the os sacrum, posterior part of the ilium, and from all the spines and transverse processes of the vertebræ of the loins. It gives a small tendon to the posterior part of each rib near its root, where a small bundle of fleshy fibres arises and unites with each ascending tendon to the third, fourth, fifth, and sixth vertebra of the neck. This with the serratus posticus inferior, and triangularis, help to contract the ribs in expiration. But they are of small force, and seem only to accelerate the motion of the ribs, which fall down chiefly by their own gravity, and the elasticity of the ligaments by which they are tied to the vertebræ. For this muscle in the horse, see Plate XIV. and the description under **HORSE**.

**SACRUM OS**. See Plate V. and the description of "*bones of the spine*," under **BONES**.

**SADDLE**, a kind of stuffed seat, laid on the back of a horse, for the convenience and security of the rider. There are several sorts of saddles in use, but they are too well known to require a particular description.

Mr. John Lawrence says, "the English saddle is highly improved within the last twenty or thirty years; not only in respect of symmetry, fitness, and beauty, but of ease, both to the rider and the horse. But nothing has contributed so much, in the modern saddle, to the ease and convenience of the rider, as the forward projection of the pads, where the knees rest, and the situation of the skirts, or flaps, above and below the knee. It is true, the knees are apt to be galled in a long journey, by the stirrup-leathers, which are now placed without the long flap; but they may be occasionally drawn beneath it. The saddle is secured by two girths only, and those placed exactly one over the other, appearing as if single. The *circingle* is out of fashionable use, except upon

the turf, and saddle-cloths are, at present, laid aside. As for the *crupper*, nothing is deemed more unsportsman-like and awkward; and whether from prejudice or not, I cannot help conceiving it always detracts from the figure of the horse. Where a horse has a good shoulder, and the saddle fits him, a crupper is totally unnecessary; but I cannot commend the taste or prudence of those who, to avoid the unfashionable appearance of a crupper, will submit to the risk of riding upon their horse's neck, or the trouble of dismounting every four miles, to replace their saddle.—If a *martingale* also subsist in this case, it is truly a pitiable one. When it is absolutely necessary to submit to be cruppered, observe that the strap be very broad and soft, that it may not chafe the horse's rump; and that a candle be sewed up within that part which goes beneath the tail. For horses that are in danger of slipping through their girths, it is necessary to provide a breast-plate, which is fastened to the saddle."

He humanely endeavours to press upon the minds of all persons, "how cruel it is, from carelessness or indifference, to suffer the furniture of an animal, which is cheerfully wearing out his life in their service, to wound or bruise his flesh, and so keep him in a constant state of torture."

**SADDLE-BACKED**, among horsemen, a name given to a horse that is hard to fit with a saddle, his reins being low, and his head and neck raised, so as to require a saddle to be made on purpose for him.

**SADDLE-GALLED**, is when a horse's back is hurt or fretted with the saddle. See the articles **GALLING** and **BACK**, &c.

**SAFFRON**. See **CROCUS**.

**SAGAPENUM**, called also **SERAPINUM**, and **GUM SAGAPEN**; the gummy resinous juice of an oriental plant, supposed to be a species of ferula. Sagapenum is retained by the college in their Pharmacopœia; it is an ingredient in the *Pilulæ e Gummi*.

**SAGE**, the *Salvia officinalis* LINN. There are different varieties of sage common in our gardens. They flower in May and June. The green and red common sages differ no otherwise than in the colour of their leaves; for the seeds of one and the same plant produce both. The small sort is a distinct species; its leaves are narrower than the others, generally of a whitish colour, and never red; most of them have at the bottom a piece standing out on each side in the form of ears. Both sorts are moderately warm aromatics, accompanied with a slight degree of astringency and bitterness: the small sort is the strongest, the large most agreeable.



In ancient times sage was celebrated as a medicine of great efficacy, inasmuch that its name was derived from its salutary qualities—*Cur moriatur homo, cui salvia crescit in horto?*—*Salvia salvatrix, natura conciliatrix*—*Salvia cum ruta faciunt tibi pocula tuta*. But at present few practitioners consider it as an article of much importance in the materia medica. Gibson, however, following the fashion of his day, commends it as a means of “sweetening the blood” in horses.

SAGINA, pearlwort, or chickweed breakstone. A genus in Linnæus’s botany. He enumerates four species.

SAGGITAL. See SUTURE.

SAGITTARIA, arrow-head. A genus in Linnæus’s botany. He enumerates five species.

SAGITTARIA ALEXIPHARMICA, also called *Cana Indica*, *Arundo Indica*, *Arrow-Root*, *Dart-wort*.

SAINTFOIN, one of the artificial grasses employed for the sustenance of cattle.

SAL AMMONIAC. See AMMONIA.

SAL PRUNELLA. See PRUNELLA.

SALACIOUS, lustful, or addicted to venery.

SALITURA, a pickle made with salt; the same as *muria* or brine.

SALIVA, is often used for *sputum*, every thing that is spit up; but it more strictly signifies that juice which is separated by the glands, called *salival*. See MOUTH. Whence

SALIVALES GLANDULÆ, the *Salivary Glands*.

SALIVALIS DUCTUS, the salivary duct. It is called also the upper *salivary duct*; it carries the saliva from the parotid gland into the mouth. For this part in the horse see that article and Plate XIII.

SALIVATION, a copious and continued flow of saliva from the mouth, produced by some stimulus on the salivary glands, exciting them inordinantly to action. This is a well-known effect of mercury on the human subject; and this remedy has a similar though not so extensive an effect of the same kind on the horse, and probably on other brute animals. The gums of the horse may without much difficulty be rendered swollen and tender by the exhibition of calomel; but we have heard of no instance of that excess of salivation occurring in the horse, as it is known to do in the human subject. See the article GLANDERS.

SALIX, the willow-tree. A genus in Linnæus’s botany. He enumerates thirty-three species.

SALLENDERS, a disease of the skin under

the knee of a horse. It is of the same nature as the mallenders (see MALLENDERS), and, of course, curable by the same means.

SALLOW, a species of *Salix*.

SALSAMENTUM, and SALSUGO; any salt pickles, or brines.

SALSOLA, glasswort, or kelpwort; a genus in Linnæus’s botany. He enumerates sixteen species.

SAL SALSUM, i. e. *Neutral Salt*, consisting of an acid and an alkali.

SALT, *sal commune*; *sal muriaticus*; or *soda muriata*; common or alimentary salt. This is a neutral salt, differing from most others in occasioning drought when swallowed. It dissolves in somewhat less than three times its weight of water; the solution slowly evaporated, and set to shoot, affords cubical crystals, which unite together into the form of hollow truncated pyramids. Exposed to the fire, it crackles and flies about, or decrepitates, as it is called; soon after it melts, and appears fluid as water. A small quantity of this salt, added to the nitrous acid, enables it to dissolve gold, but renders it unfit for dissolving silver. If a solution of silver be poured into liquors containing even a minute portion of common salt, the whole immediately grows turbid and white; this phenomenon is owing to the precipitation of the silver.

This salt is either found in a solid form in the bowels of the earth, or dissolved in the waters of the sea or saline springs. It is not without its use in medicine, and is thought to contribute to the health of sickly cattle when sprinkled in moderate quantity in their provender. It is a useful ingredient in common laxative clysters.

SALT MARSHES. See MARSHES.

SALT PETRE, the same as nitre. See NITRE.

SALT OF TARTAR, the same as kali. See KALI. It is merely potash, separated from its impurities by solution in water, which is afterwards evaporated, and the salt reproduced in an improved state.

SALT OF ROCHELLE. Cream of tartar combines, with effervescence, to the point of saturation, with the marine alkali. From this combination results a salt which forms larger crystals than those of the soluble tartar.

SALTS. In natural history these form a class in fossilogy. They are described by Dr. Cullen, as more or less sapid, miscible with water, and not inflammable. The only exception to this definition is, that the volatile alkali, in an aerial state, is in a certain degree inflammable.

SALTS, a name given by way of eminence,

to the *Natron Vitriolatum* of the London pharmacopœia, formerly called *Glauber's salt*. It is made thus :

Dissolve in warm water the mass which remains after the distillation of spirit of sea salt : filter the solution, and crystallise the salt. Expel the superfluous acid, by exposing the salt to a strong fire, in an open vessel, then boil it a little in the water, strain the solution, and set it aside to crystallise.

There is no great danger of the crystals proving too sharp, even when the spirit of salt is made with the largest proportion of oil of vitriol directed under that process. The liquor which remains after the crystallisation is indeed very acid ; and with regard to this preparation, it is convenient it should be so ; for otherwise, the crystals will be very small, and likewise in little quantity. Where a sufficient proportion of oil of vitriol has not been employed in the distillation of the spirit, it is necessary to add some to the liquor, in order to promote the crystallisation of the salt.

Of this salt Mr. J. Lawrence expresses a high opinion. "For my own part, I have experienced no difficulty hitherto, in purging even dray-horses, either with succotrine aloes or Glauber's salts. As to the latter, or the purging salts, I know of none of our veterinarians who have made use of them ; they advert to the difficulty of administering them : nor do I recollect any author who recommends them alone as a purge. But I have been *many years* in the constant habit of purging horses with *salts*, and with *never-failing success*. The saline purges appear to me to debilitate the animal body by their operation less than any others, and to refrigerate the humours more : they are specific in certain cases, and in fact the idea of elective purgation must be allowed to a certain degree ; for instance, in the case of the absorbent magnesia, which invariably attracts acids, and from the combination results a neutral purging liquor. Many horses require no other purges whatever than *salts*, and by the use of them may be kept in the first style of condition. They are also excellent alteratives, as one might fairly presume previous to experience, by the analogy of the salt marshes, where horses receive so much benefit from the peculiar saline quality of the water.

"Salts usually prove powerfully diuretic to a horse, and are specifically calculated for such as, from high-feeding, and standing much in the stable, are oppressed with a redundancy and super-agglutination of the fluids, causing in-

flamed eyes, swelled legs, turbid urine, which, if long neglected, seldom fail to terminate in the most fatal diseases. This purgative is superior to all for producing a fine glossy coat and high spirits. The salts seem to act upon the contents of the intestines, and the animal humours, by a certain peculiar power of dissolution, rather than by the accustomed stimulus of other purgatives ; and if they do not always produce those liquid ejections from the horse, which result from the more powerful cathartics, they bring away an equal quantity of dung in a softened state. Horses which have had their regular aloetic purges, but which, from hardness of constitution, or defect of exercise, have become gross and pursive, and at a time, perhaps, when brisk services may be required of them, are speedily and safely put in order, by a short course of salined water." In conclusion, this writer asserts, that this cheap and valuable article of the materia medica deserves the utmost attention of all keepers of horses.

SALTS, or SOULTS, in horsemanship, the leaping and prancing of horses : a kind of curveting.

SALUBRIS, and SALUTARIS, both from *salus, health*, express any thing in health, or conducive thereunto ; and even such diseases are by some called salutary, as are curable, and leave the constitution better than before.

SALVIA, sage. See SAGE.

SAMBUCUS, elder. See ELDER.

SAMPSYCHINON (σαμψυχινον), a name formerly given to an oil, and an ointment wherein marjoram was the chief ingredient ; from *sampsuchus*, a synonymous term for that plant.

SAMYEL, a wind that blows in some parts of Arabia. It is quickly destructive, and soon after death the putrefaction is so great that the limbs of a man may easily be separated from the trunk. It is similar to the harmattan in its effects.

SANATIVE (from *sano, to heal*), an epithet applied to any thing conducing to the cure of a disease.

SANCTÆ HELENÆ RADIX ; a long knotted root, black without and white within ; to the taste like galangal root. It is brought from St. Helena in the province of Florida.

SANCTUS, holy, an epithet superstitiously applied to many remedies both simple and compound, as whimsical persons have conceived of their virtues. Thus *guaiacum* was called *lignum sanctum*, and even our late dispensatories retained a purging powder under the title of *pulvis sanctus*.

SANDARACA, a name which has been.



used to signify many different things, as a waxy substance falling with spring-dew, in which bees are said much to delight. It is also the Arabian name for gum-juniper, or the *vernix*; as likewise for a mineral production not much unlike arsenic, on which account that is sometimes called *arsenicum rubrum*.

**SAND-CRACKS**, a defect in the horse's foot. They consist of a separation of the fibres of the hoof in a perpendicular direction. If they extend to the coronet, they are extremely troublesome to cure. Those horses are most liable to them that have either strong and brittle hoofs, or narrow heels. Blood horses are more subject to them than inferior horses.

"In the treatment of them," Mr. Denny says, "the part around the crack must be rasped thin. The firing iron should be drawn above and below it to the extent of the fissure, in order to prevent its extension. The iron should also be carried over the crack, by which means a slight degree of moisture will exude, and glue up the part; which may be covered with some of the following ointment, spread on tow, and secured by a bandage.

Take Ointment of marsh-mallow, two ounces;  
Common turpentine, one ounce. Mix.

"The horse must have a bar shoe, which will rest firmly on the frog, and be hollowed in the part which is opposite to the seat of the disease, so that no pressure may be made on that part of the foot. Rest should also be allowed for a few days; and after this only moderate exercise permitted, until the fissure has descended towards the inferior part of the foot."

Besides this, we are advised to bathe the coronet and hoof twice a-day with the following, in order to promote the growth of the horn from the coronet.

Take Ointment of marsh-mallow,  
Barbadoes tar, of each three ounces;  
Spirit of turpentine, one ounce.  
Mix and make the embrocation.

**SANDYX**, is ceruse burned till it resembles the red arsenic in colour; or is a red earth, the same probably as the red orpiment.

**SANGUIFLUXUS**, i. e. HÆMORRHAGE.

**SANGUIFICATION**, making blood, a term which may be understood by considering what is explained under the term **DIGESTION**: for as chyle is made out of the aliments by the functions of the stomach, so the chyle is made into

blood by the action of the arteries. See **BLOOD**, **STOMACH**, &c.

**SANGUINE**, bloody, or of a constitution abounding with blood; from

**SANGUIS**, blood. See **BLOOD**.

**SANGUIS DRACONIS**, *dragons-blood*, a resin brought from the East-Indies, either in oval drops, wrapped up in flag leaves, or in large masses, composed of smaller tears. The writers on the materia medica in general give the preference to the former, though the latter is not unfrequently of equal goodness; the fine dragons-blood of either sort breaks smooth, free from any visible impurities, of a dark red colour, which changes, upon being powdered, into an elegant bright crimson. Several artificial compositions, coloured with the true dragons-blood, or Brazil wood, are sometimes sold in the room of this commodity: some of these dissolve, like gums, in water; others crackle in the fire, without proving inflammable; whilst the genuine sanguis draconis readily melts and catches flame, and is not acted on by watery liquors. It totally dissolves in pure spirit, and tinges a large quantity of the menstruum of a deep red colour: it is likewise soluble in expressed oils, and gives them a red hue, less beautiful than that communicated by anchusa. This drug, in substance, has no sensible smell or taste; when dissolved, it discovers some degree of warmth and pungency. It is usually looked upon as an astringent, and sometimes directed as such, in extemporaneous prescription, against gleets and other fluxes: in these cases, it produces the general effects of resinous bodies, incrassating the fluids, and strengthening the solids. Gibbon commends it, for these purposes, in the diseases of brutes, and as an ingredient in *strengthening plasters*.

**SANGUISORBA**, *burnet*; a genus in Linnæus's botany. He enumerates three species.

**SANGUISUGA**, blood-sucker, a name given by some to a leech, from its faculty of drawing blood from animals.

**SANICULA MAS**, also called *diapensia*, *sanicle*, *self-heal*. It is the *sanicula europæa* LINN.

**SANIES**. In ulcers there sometimes appears a thin, limpid, and sometimes greenish, discharge, thus named. See **SORDES**. By the term *sanies*, a thick and bloody pus, or matter, is also understood.

**SANIODES** (σανιωδης), where the breast is straitened or flattened, like σανις, a table, flat-chested.

**SANTALUM**, *saunders*. A genus in Lin-

*pus's* botany. There is in fact but one species, viz. the white. The *santalum rubrum*, a red wood used in colouring various substances, as spirits, ointments, &c. is said to be the product of the *pterocarpus santalinus* LINN. They are neither of them of any importance in medicine.

**SANTONICUM**, worm-feed, a species of *artemisia*. This feed has been retained by the college in their Pharmacopœia as an anthelmintic remedy.

**SAPHÆNA**, probably from *σαφης*, *manifestus*, easy to be seen, because it lies very plain in sight, is a vein in the leg in the human subject. The *saphena minor* is a branch from the *saphena major*. For this in the horse see Plate XIII. and description of "the lower limbs," under HORSE.

**SAPIENTIE DENTES**, thus called, because they appear not till animals are become adult.

**SAPO**, soap. It is composed of oils and fat, with alkaline salts. The college in their Pharmacopœia have directed the soap formed by olive oil with natron or the fossil alkali. Common soap, however, is equally proper for veterinary purposes.

**SAPO VOLATILIS**, volatile soap. Of this there are three kinds; one is composed of fixed alkalies and volatile oil, another of volatile alkalies and gross oils, the third of salt and oil that are both volatile.

**SAPONACEUM LINIMENTUM**, saponaceous liniment; called also *opodeldoc*. See **OPODELDOC**.

**SAPONACIÆ NUCULÆ**, also called *baecæ Bermudenses*, soap-berries, Bermudas-berries. This is a spherical fruit, about the size of a cherry.

**SAPONULÆ**, are combinations of volatile or essential oils with different bases. *Acid saponule* are combinations of volatile or essential oils with different acids.

**SARCOCELE** (*σαρκονηλη*, from *σαρξ*, *caro*, *flesh*, and *νηλη*, *tumor*, *a swelling*), a fleshy excrescence of the testicles, which sometimes grows so large as to stretch the scrotum much beyond its natural size. The term *sarcoma* is of the same signification; as is likewise *sarcosis*.

**SARCOCOLLA**, a species of **PENÆA**.

**SARCOCOLLA** (*σαρκocolλα*), *sarcocol*, or *flesh-glue*; a gummy resinous juice from the *penæa mucronata* LINN. according to Curtis, in his *Catalogue of the London Botanic Garden*; and from the *penæa sarcocolla*, according to Weston, in his *Universal Botanist*. It has been retained by the London college in their Pharmacopœia; and is an ingredient in the pulvis e cerussa.

**SARCO-EPIPLOCELE**, a kind of compound rupture, consisting of a descent of the epiploon, and a *sarcocele*, or a rupture of the indurated epiploon, either umbilical or scrotal.

**SARCOLOGIA**, *sarcology*. It includes *myology*, *splanchnology*, *angiology*, *neurology*, and the doctrine of the *integuments*.

**SARCOMPHALON** (*σαρκομφαλον*, from *σαρξ*, *flesh*, and *ομφαλος*, *the navel*); a fleshy excrescence at the navel.

**SARCOTICS**, *σαρκωτικά*, from the same derivation, are medicines that fill up ulcers with new flesh, the same as **INCARNATIVES**. Many other words are also compounded at *pleasure*, from the same foundation, not necessary to be inserted here.

**SARSA**, *sarsaparilla*.

**SARSAPARILLA**, a species of *Smilax*, called also *zarza*, *zarzaparilla*, *smilax aspera Peruviana*, *salsaparilla*, *zarcaparilla*. This root has been retained by the college in their Pharmacopœia. It is ordered in a simple form, called *Decoctum Sarsaparillæ*, and also combined with mezercon root, guaiacum, &c. called *Decoctum Sarsaparillæ compositum*. Instances of its use in veterinary medicine are rare.

**SARTORIUS**, called also *Longus Tibiæ*, is a muscle that arises from the inferior part of the spine of the ilium, and running obliquely by the inside of the thigh, is inserted into the internal side of the tibia, three or four fingers breadth below its upper extremity. By this we throw one leg cross another. It is thus named from *sartor*, *a taylor*; from the use which taylor's make of it, to fit cross-legged. For the *sartorius* in the horse, see that article, and Plate XI.

**SASSAFRAS**, the *sassafras* tree, a species of *Laurus*. The college have retained the wood, the root, and its bark, in their Pharmacopœia; it is an ingredient in the *decoctum sarsaparillæ compositum*.

**SATURANTIA**, *saturants*, a term sometimes used in the same sense as *Absorbents*.

**SATURNUS**. The old chemists ascribed this name to lead, because they would have that metal to be under the influence of the planet Saturn. See **LEAD**.

**SATYRIASIS** (*σατυριασις*), and **SATYRISMUS**, (*σατυριασμος*), signify a lustful disposition in animals. This exists at stated periods only amongst the females.

**SAUNDERS**. See **SANTALUM**.

**SAVIN**, the *Juniperus Sabina* LINN. This is an evergreen shrub, clothed with small, somewhat prickly, leaves. It does not produce fruit till very old, and hence has been generally re-



puted barren. The leaves have a bitter, acrid, biting taste; and a strong disagreeable smell: distilled with water, they yield an essential oil, in larger quantity than any other known vegetable, the turpentine-tree alone excepted.

In the human subject, favin is a warm irritating aperient medicine. It heats and stimulates the whole system; is capable of promoting sweat, urine, and all the glandular secretions; and is found of service in obstructions of the viscera, proceeding from a laxity and weakness of the vessels, or a cold sluggish indispotion of the juices.

For horses, it is commended by Gibson, as "a very powerful cleanser in all their *scourings*," as a good anthelmintic; and its juice as being a good application to foul ulcers and eruptions on the skin.

**SAXIFRAGA**, saxifrage, a genus in Linnaeus's botany. He enumerates forty-four species. The name *Saxifrage*, quasi *Saxum frangere*, to break the stone, is applicable to any thing having this property, but it is most commonly given to the plant, from an opinion of its medicinal virtues to this effect.

**SCAB**, or **MANGE**, in horses. See the article **MANGE**.

**SCAB**, or **CROWN-SCAB**. See **CROWN-SCAB**.

**SCAB**, in sheep. See **SHEEP**.

**SCABBARD**, a name for the skin that serves for a sheath or case to a horse's yard.

**SCABBED-HEELS**, the disease otherwise called the *running thrush*, or *frush*. See **THRUSH**.

**SCABIES**, a scab, is used sometimes for the itch, and such-like cutaneous eruptions.

**SCABIOSA**, matfelson, or purple great knap-weed, a species of **CENTAUREA**.

**SCALD**, or **BURN**. See the article **BURNS**.

**SCALDING**, a name given to some caustic remedies applied hot. Gibson speaks of a commendous way of curing the poll-evil, where there is an exceedingly bad disposition and a very great foulness, by *scalding*, as the farriers term it. Several, he says, succeed very well in it. The manner is as follows:

Take of Corrosive sublimate,

Verdegrise in fine powder,

Blue vitriol, of each two drachms;

Green copperas, half an ounce;

Honey, or *Ægyptiacum*, two ounces;

Oil of turpentine,

Train oil, of each eight ounces;

Rectified spirit of wine, four ounces.

Mix these together in a pint bottle for use.

\* Some make their scalding mixture milder, by using red precipitate instead of sublimate, and

white vitriol instead of the blue; others leave out the train oil, and use only oil of turpentine and linseed oil, which makes but little alteration; and some use the following with good success:

Take of Verdegrise, half an ounce;

Train oil, half a pint;

Oil of turpentine, four ounces;

Oil of vitriol, two ounces. Mix.

"The manner of scalding is first of all to clean the abscess very well, with a piece of sponge soaked in vinegar and squeezed. Then put a sufficient quantity of the mixture into a ladle with a spout, and when it is made *scalding hot*, pour it into the abscess, closing the lips together with one or more stitches in proportion to its size. This is to remain so for several days, and if good matter appears, and not in an over-great quantity, it will soon do well without any other dressing besides bathing with spirit of wine. But if the matter begins to flow in great abundance, and of a thin viscid consistence, it will require to be scalded a second time or oftener, if the same disposition continue. The corrosive ingredients, whereof these liquid mixtures are compounded, would be harsh to human flesh, but agree very well with horses, whose fibres are more rigid; and therefore such sharp applications help greatly to contract the vessels. This method of proceeding is chiefly useful when the poll-evil happens to be the crisis of an acute fever, or when it happens to horses that have been forfeited, or under some other chronical disorder; for in all cases proceeding from common accidents, cleansing tinctures and fresh dressings will do the business."

Here our author subjoins the case of a horse that was cured of a poll-evil by scalding. "In this," says he, "are some very extraordinary circumstances that will give further light into the nature of this malady, and the method how such cases ought to be treated, especially when they proceed from some previous sickness, which is often the cause of a poll-evil, though hitherto not much attended to by practitioners.

"This was a young troop horse that had been pampered for sale, and had fallen into a very dangerous fever, attended with a great stupor and heaviness, with a total loss of appetite, and a loathing of his food. The animal had but little relief till a large critical swelling arose on his poll, at first about the bigness of a penny loaf, but in a few days it grew to a much greater size, for the weight of it made him stoop his head as low as his manger, and by degrees the swelling grew so prodigiously that

his muzzle came within a few inches of the ground, and rose so suddenly all along his neck, and down to his shoulders and fore legs, that it was impossible to raise his head above a foot from the ground. His neck measured above a quarter of a yard broad over his mane, his shoulders were blown up to a monstrous size, like some horses that have been staked under the arm. Indeed he grew to such a spectacle, that all who saw him thought it was impossible he should recover. One thing however was much in his favour, for as the swelling increased his appetite grew better; and while he continued in that posture with his mouth to the ground, which was about three weeks before the tumour broke, he eat his whole allowance of hay every day, which was laid down before him a little at a time, and licked up bran and oats out of a flat basket, as much as was sufficient for a horse in health, that did no business; and drank plentifully of water-gruel, which was given by holding about half a pailful at a time, edge-ways, that he might get his head into it. When the tumour broke, it discharged a very large quantity of curdled matter at first, which soon changed to a viscid dusky slime; the orifice was on one side near the occiput, though the matter had also a drain from the other side, and continued running for about a month or five weeks, in very great quantity, before the swelling of his neck and shoulders came down, and before he came to the free use of his neck and limbs. The running by this time was much abated, but the matter still of no good consistence; and therefore having now no other disorder besides the abscess, and that reduced to a moderate compass, I caused it to be laid open, and the part *scalded* in the manner already described. I deferred opening it all this time, though I was much solicited to do it sooner; for I found by this delay the fever was entirely removed, and the distemper confined wholly to a single part: whereas if it had been laid open sooner, the symptoms might again have been renewed, the discharge been less perfect, the swelling of the neck and shoulders would not have come down so well, nor the malady have been so completely removed, either by applications to the part, or by artificial drains or issues of any kind. After the first scald the matter was small in quantity, and looked well; but in ten days it began to look thin and of a dirty colour again, so that I caused him to be scalded a second time, after which it healed up, and he had three or four doses of purging physic and some antimonial powders given him; but the part being still weak, and

the horse naturally full of motion, especially with his head, it swelled again some months afterwards and broke; which accident proceeded from this, that the muscular flesh was wasted more on one side of his pole than on the other, which gave some restraint in pulling down his head, and consequently caused fresh pain till the flesh grew, and that the muscles on both sides came to their proper equilibrium: and though it broke out again once or twice afterwards, yet the swelling was only like a large marble, the matter was good, and did not continue running above two or three days. And about a year afterwards the flesh on one side was grown equal to the other, and the horse continued sound and useful many years without any visible mark or deformity."

Mr. John Lawrence, however, very justly reprobates this remedy, on the ground of its cruelty. At least he would confine its use only to extreme cases, when there exists in the parts a great degree of morbid insensibility. He says he knew it "applied to a fistula in the withers of a gross, foul-bodied cart gelding, in which the discharge of thick, fetid, oily matter was so abundant, as to drown all mild applications. It was brought to discharge good matter by once scalding, on which a perfect cure ensued."

SCALENUS (*σκαληνος*), is a muscle of the neck that arises from the first and second ribs, and ascending, is inserted into all the transverse processes of the neck, except the first. This muscle seems to be three; but such division is not of any real use. It is perforated for the passage of the veins, arteries, and nerves; because the neck is more easily moved than that part of the ribs to which they are fastened; therefore it is justly reckoned amongst the benders of the neck. For this muscle in the horse, see Plate XIII. and article HORSE.

SCALPING, the operation of laying the skull bare. It is required in the use of the trephine when the bone has been fractured.

SCALPRUM (from *scalpro*, to rasp, or raise), a lenticular or raspatory, called also a RUGINE.

SCAMMONY, the *Convolvulus Scammonia* LINN. A concrete juice is extracted from the roots of this, which is a large climbing plant growing in Asiatic Turkey. The best scammony comes from Aleppo, in light spongy masses, easily friable, of a shining ash colour verging to black; when powdered, of a light grey or whitish colour. An inferior sort is brought from Smyrna, in more compact, ponderous pieces, of a darker colour, and full of sand and other impurities. This juice is chiefly of the resinous kind: rectified spirit dissolves



five ounces out of six, the remainder is a mucilaginous substance involved with dross: proof spirit totally dissolves it, the impurities only being left. It has a faint unpleasant smell, and a bitterish somewhat acrimonious taste.

To the human intestines scammony is an efficacious and strong purgative. Some indeed have condemned it as unsafe, and laid many ill qualities to its charge; the principal of which is, that its operation is uncertain, a full dose proving sometimes ineffectual, whilst at other times a much smaller one occasions dangerous hypercatharses. This difference however is owing entirely to the different circumstances of the patient, and not to any ill quality, or irregularity of operation in the medicine. Where the intestines are lined with an excessive load of mucus, the scammony passes through, without exerting itself upon them; where the natural mucus is deficient, a small dose of this or any other resinous cathartic irritates and inflames. Many have endeavoured to abate the force of this drug, and correct its imaginary virulence, by exposing it to the fume of sulphur, dissolving it in acid juices, and the like: but this could do no more than destroy as it were a part of the medicine, without making any alteration in the rest. Scammony in substance, judiciously managed, stands not in need of any corrector: if triturated with sugar or with almonds, as apothecaries commonly do for other resinous purgatives, it becomes sufficiently safe and mild in operation. It may likewise be conveniently dissolved, by trituration, in a strong decoction of liquorice, and then poured off from the feces. The college of Wirtemberg assures us, that by this treatment it becomes mildly purgative, without being attended with gripes, or other inconveniences; and that it likewise proves inoffensive to the palate. The common dose of scammony is from three to twelve grains for a man.

Gibson recommends it as a purgative for horses, especially compounded in the old remedy called *Diagridium*.

**SCAPELLATUM**, a term by some authors used in the same sense as the Greeks applied *phimosis*, *φιμωσις*, for a denudation of the glans of the penis, when the prepuce could not be drawn over it.

**SCAPHOIDES** (*σκαφοειδης*, from *scapha*, *σκαφη*, a boat, and *ειδος*, *forma*, *shape*), the *Navicular* bone.

**SCAPULARIÆ ARTERIÆ**, the scapulary arteries, or those which supply the shoulderblade.

**SCAPULÆ** (*ομοπλάται*), the *shoulder-blades*,

two large and broad bones, like a scalene triangle. In man, they are situated on each side of the upper and back part of the thorax. The substance of the scapula is thin, but solid and firm: its outside is somewhat convex, and its inside concave; its upper edge is called *costa superior*, and its lower *costa inferior*: its broad end is called its *basis*, which, with the two edges, make the upper and lower angles. They have each three processes, of which the first runs all along the middle of their outside, and is called their *spine*. That end of the spine which receives the extremity of the clavicle is called *acromion*. The second process is a little lower than the acromion; it is short and sharp like a crow's bill, therefore called *coracoid*: these two processes are tied to one another by a strong ligament, which serves to keep the head of the humerus in the cavity of the third process, which is called *cervix*. This process is the extremity of the scapula, which is opposite to its basis. It has a round sinus, tipped about its brim with a cartilage, which receives the head of the humerus. The use of the scapula is to receive the extremities of the clavicle and humerus, for the easier motion of the arm, and to give rise to the muscles which move the arm.

The scapulæ in brute subjects have some differences observable in their form. For this in the horse, see the anatomical plates, and the descriptions corresponding to them.

**SCAPUS**, a term in botany for that species of stalk which supports a flower only, and not leaves; as in a tulip.

**SCARF-SKIN**. See **CUTICLE**.

**SCARIFICATION**, an incision of the skin with a lancet, or such-like instrument. It is most practised in cupping, which acts by stimulation as well as by evacuation.

**SCARIFICATOR**, an instrument used to scarify a part. It is very conveniently effected by a number of points set in a plane, which are all struck into the part at once.

**SCATCH-MOUTH**, in the manege, a bit-mouth differing from a cannon-mouth in this, that the cannon-mouth is round, whereas the scatch-mouth is more oval.—Commonly snaffles are scatch-mouths. See the articles **BIT-MOUTH** and **CANNON-MOUTH**.

**SCELOTYRBE** (*σκελοτυρβη*, from *σκελος*, *crus*, the leg, and *τυρβη*, *tumultus*, *uproar*), signifies those pains in the legs that generally attend scorbutic habits; whence it is also frequently used for the scurvy itself, and applied to some medicines contrived against such disorders.

**SCEPTIC** (*σκεπτικος*), one who doubts the

truth of any thing, till thoroughly examined. Galen makes mention, in his time, of a public school or college of physicians, who professed themselves sceptics. Cartesius gave much encouragement to this sect, whom he taught to call every thing in question till re-examined; and our countryman, Mr. Boyle, wrote a book, well known, under the title of the *Sceptical Chemist*, in which every thing is laid down by way of enquiry.

SCHARBOCK, a Danish name for the scurvy, when it is attended with livid spots.

SCHERBENCOBALT. Thus the Germans call the native metal of arsenic. It soon becomes black in the air, and sometimes is of a scaly and kidney-like structure.

SCHLOT. The brine from which table salt is obtained, is evaporated in large iron pans. At the beginning of the evaporation, the detached earth and the selenites separate and precipitate; and the selenites carries with it a great quantity of Glauber's salt. This precipitate forms a matter which has an earthy appearance, and is called *schlot*, or *scratch*, by the workmen.

SCHOLIUM, is a remark made at pleasure, and as it were by the by, on any proposition, before advanced and treated of.

SCHOOL, a term in the manege, is used to signify at once the lesson and labour both of the horse and horseman. See HORSEMANSHIP. A *school-pace*, or going, denotes the same with *ecoute*. See the article *ECOUTE*.

SCIATICA, or RHEUMATISM, in horses. See the article RHEUMATISM.

SCIATICÆ ARTERIÆ, the sciatic arteries: they are branches of the hypogastricæ arteriæ. For these in the horse, see Plate X. and the description under HORSE.

SCIATICÆ VENÆ, the sciatic veins. These arise from the crural veins: and are so called because they accompany the sciatic nerve. See Plate X.

SCIATICI NERVI, the sciatic nerves. See Plate X. and article HORSE.

SCILLA. See SQUILL.

SCIRRHUS (σκιρρος), SCIRRHOÆ (σκιρρωσα), and SCIRRHOIS (σκιρρωσις), from σκιρρῶω, *induro*, to harden; an induration of the glands, such as happens to the liver in many animals. It is reckoned one of the terminations of inflammation. Gibson defines it, a very hard swelling, sometimes entire, smooth, and without pain; sometimes divided into little knots and bundles, seated for the most part among the glands and kernels. See the article TUMOR.

SCLAREA, clary, a species of *salvia*.

SCLEROPHTHALMIA (σκληροφθαλμία), a disease wherein the eye-lids turn out red, hard, and dry, and very difficult to cure.

SCLEROTICA TUNICA, so called from σκληρῶω, *induro*, to harden, the thick white coat of the eye. See EYE.

SCLEROTICS, are medicines which harden and consolidate the parts they are applied upon.

SCLERANTHUS, knawel, or German knot-grass, a genus in Linnæus's botany. He enumerates three species.

SCOBs, most properly signifies the pot-ashes, or the scoriæ of any metal; but the term is by some more laxly applied, as Scribonius Largus mentions a *scobs ebenea*.

SCLOPENDRIUM, hart's-tongue, a species of *asplenium*.

SCOPULA, a brush. The flesh-brush promotes a brisk circulation, and free perspiration in animals. See DRESSING.

SCORDIUM, water-germander, a species of *teucrium*. This herb has been retained in the new college pharmacopœia.

SCORIÆ, are the recrements of metals, i. e. dross.

SCOPOLIA, a species of *HYOSCYAMUS*.

SCORODONIA, wood-sage, a species of *TEUCCRIUM*.

SCORZONERA, viper's-grass, a genus in Linnæus's botany. He enumerates fourteen species.

SCOTODINE (σκοτοδίνη), or SCOTODINOS, a vertigo attended with dimness of sight.

SCOTOMIA (σκοτωμία), the same as *amaurosis*, a transitory blindness.

SCOTOS (σκοτος), darkness or dimness of sight.

SCOURING. See DIARRHŒA.

SCRATCHES, a distemper in horses, of several kinds, distinguished by various names, viz. crepances, rat-tails, mules, kibes, pains, &c. being no other than the scratches, which are certain dry scabs, chops, or rifts, that occur between the heel and pastern-joints, and do many times go above the pastern, to the very hoof of the hinder-legs, and sometimes are upon all four legs, though this is not very common. Scratches in the heels have so much affinity with the grease, and are so often concomitants of that distemper, that the method of treating them may be selected chiefly from what has been said under the article GREASE. See the articles CREPANCES, RAT-TAILS, &c.

SCROBICULUS CORDIS, that part popularly called the pit of the stomach.



SCROFA, the Hog, an animal belonging to the class *mammalia*, and order *belluæ*.

Of all quadrupeds, the hog is the most rude and brutal. The imperfections of his form seem to have an influence on his nature and dispositions. All his habits are gross; all his appetites are impure; all his sensations are confined to a furious lust, and a brutal gluttony. He devours indiscriminately every thing that comes in his way, even his own progeny the moment after their birth. This voraciousness seems to proceed from the perpetual cravings of his stomach, which is of an immoderate size; and the grossness of his appetite, it is probable, arises from the bluntness of his senses of taste and of feeling. The rudeness of the hair, the hardness of the skin, and the thickness of the fat, render these animals less sensible to blows. Mice have been known to lodge upon a hog's back, and to eat his skin and fat, without his showing any marks of sensibility. The other senses of the hog are very good. It is well known to the hunters that the wild boar hears and smells at a great distance; for, in order to surprise him, they are obliged to watch him in silence during the night, and to place themselves opposite to the wind, that he may not perceive the smell, which never fails to make him turn back.

But the hog, though the most impure and filthy of all quadrupeds, is yet useful by the very fordidness of its manners; this alone devouring what is the refuse of all others, and contributing not only to remove what would be a nuisance to the human race, but also converting the most nauseous offals into the richest nutriment: for this reason the stomach is capacious, and its gluttony excessive: not that its palate is insensible to the difference of eatables; for where it finds variety, it will reject the worst with as distinguished a taste as other quadrupeds.

The parts of this animal are finely adapted to its way of life. As its method of feeding is by turning up the earth with its nose for roots of different kinds, so nature has given it a more prone form than other animals; a strong brawny neck; eyes small, and placed high in the head; a long snout, nose callous and tough, and a quick sense of smelling to trace out its food. Its intestines have a strong resemblance to those of the human species. The external form of its body is very unwieldy; yet, by the strength of its tendons, the wild boar (which is only a variety of the common kind) is enabled to fly from the hunters with

amazing agility: the back-toe on the feet of this animal prevents its slipping while it descends declivities, and must be of singular use when pursued. Yet, notwithstanding its powers of motion, it is by nature stupid, inactive, and drowsy; much inclined to increase in fat, which is disposed in a different manner from that of other animals, and forms a regular coat over the whole body. It is restless at a change of weather, and in certain high winds is so agitated as to run violently, screaming horribly at the same time: it is fond of wallowing in the dirt, either to cool its surfeited body, or to destroy the lice, ticks, and other insects with which it is infected. Its diseases generally arise from foul feeding and intemperance; measles, imposthumes, and scrophulous complaints, are reckoned among them. These are best prevented by keeping the animals, as the ancients strongly recommended, very clean in their sties; allowing them air, exercise, and a sufficiency of water. Linnæus observes, that its flesh is wholesome food for athletic constitutions, or those that use much exercise; but bad for such as lead a sedentary life: it is, however, of most universal use; and furnishes numberless materials for epicurism.

The boar, or male of these creatures, is chosen with great care, when intended for the propagation of his species; and is thus employed from the age of two to five years, and then either sold or fatted. The males not allotted to this use are castrated, sometimes at the age of six weeks, and sometimes when they are six months old; and then fed to a great size either for sale or for the use of the family. Sows are kept for breed generally from one year old to seven, and are then spayed and fatted. They have commonly more grease on their intestines than hogs, these being fattest on their backs.

As to the age of these animals, it is said that the life of the wild boar may be extended to twenty-five or thirty years. Aristotle says, that hogs in general live twenty years; and adds, that both males and females are fertile till they arrive at the age of fifteen. They can engender at the age of nine or twelve months; but it is better to restrain them till they be eighteen months or two years. The first litter of the sow is not numerous; and, when only one year old, her pigs are weak, and even imperfect. She may be said to be in season at all times. Though full, she solicits the approach of the male. This may be regarded as an excess among animals; for almost every other species refuse the male after conception. The arduous

of the sow, though almost perpetual, is however marked by paroxysms and immoderate movements, which always terminate by her wallowing in the mire. She, at the same time, emits a thick whitish fluid. She goes four months with young; brings forth in the beginning of the fifth; and soon afterwards solicits the male, is impregnated a second time, and of course brings forth twice a-year. The wild sow, which every way resembles the domestic kind, produces only once a-year. This difference in fertility is probably owing to want of nourishment, and the necessity of suckling her pigs much longer than the domestic sow, which is never allowed to nurse her young above fifteen days or three weeks. Only eight or nine of the litter are kept longer; the rest are sold. In fifteen days, pigs are excellent food.

As these creatures, though exceedingly voracious, will feed almost on any thing, they are bred and kept every-where, and are quickly and cheaply fattened. In miry and in marshy grounds (from which they are not averse) they devour worms, frogs, fern, rush, and sedge roots. In drier and in woody countries, they feed on hips, haws, flos, crabs, mast, chefnuts, acorns, &c. and on this food they will grow fleshy and fat. They are a kind of natural scavengers, will thrive on the trash of an orchard, the outcasts of the kitchen, the sweepings of barns and granaries, the offals of a market, and most richly on the refuse of a dairy. If near the sea, they will search the shores for shell-fish; in the fields, they eat grass; and in cities and large towns they are kept in great numbers, and supported chiefly by grains. It is evident that the facility of feeding them every-where at a small expence, is a national benefit, more especially in a country where the people are much accustomed to eat flesh. It is no less observable, that notwithstanding this facility of feeding, and the multitudes of swine maintained, they seldom fail of coming to a good market. In no part of Europe is the management of these creatures better understood than in Britain. The time of farrowing is adjusted to the nature of the farm, the food it can supply; and the number of pigs sold and kept are in like manner adjusted. New kinds of food, more wholesome and nutritive than what were used formerly, have been introduced, such as turnips, carrots, clover, &c. They are in most places regularly managed and closely attended. Tusser, many years since, affirmed from his own experience, that a sow might bring as much profit as a cow. In some counties, it is said, a sow dependent on a dairy

has produced, all expences deducted, about 10*l*. in the space of a year.—In Britain, these animals in different counties are of very different sizes. In Leicestershire, Northamptonshire, and Pembrokehire, they are very large. In Hampshire, Wiltshire, and wherever they can run in the woods, and feed on mast and acorns, their flesh is firmer and better. The Chinese swine are common with us; they are smaller, blacker, and their legs shorter than ours; so that, when fat, their bellies literally touch the ground. They thrive exceedingly well with us, are very prolific, and their flesh very fine and well tasted.

In considering the advantages derived from these creatures, it is to be observed, that the flesh of all the different kinds, and at all ages, is looked upon as a very substantial and agreeable aliment; and of course, in their proper seasons, the different sorts of provisions thus supplied are all of them very saleable. The wild boar was esteemed a prime delicacy amongst the Romans, and the flesh of the tame was much more in favour with our ancestors than with us; though brawn has still many admirers, is made in the greatest perfection, and considered as a rarity peculiar to this country. Pork, though it might be wisely prohibited in some warm countries, is found by experience equally nutritive and salutary here. As such it furnishes a very large proportion of that food which is vended in our markets. It takes salt better, and keeps longer, than the flesh of any other animal; and the consumption of it is prodigious when pickled or salted, more especially in our foreign garrisons and in the sea-service. Our bacon is differently cured, so as to render it acceptable to all palates; and our hams are not at all inferior to those of other countries. Fresh pork sells nearly as dear as beef; the lard brings very nearly the same price; the blood, the intestines, the feet, and the tongue, are all prepared as food. The fat of the intestines and web, which differs from common lard, is employed for greasing axles of wheels, and for many other purposes. Sieves are made of the skin; and brushes, pencils, &c. of the bristles. The dung is reputed next in value to that of sheep. Mr. Worlidge proposes that swine should be turned into a close well-paled, and planted with greens, pulse, and roots, on which they may feed, and by their trampling and their dung raise a great quantity of excellent soil. Mr. Mortimer assures us that some, on poor light shallow land in Staffordshire, sow a small white pea, which they never reap, but turn in so many hogs to eat them as they think they will fat; and there they lie day and night, and their dung will so enrich the land, that it



will bring a good fward upon it, and will graze many years afterwards. Our old husbandmen had an ill opinion of this dung, as supposing it bred weeds, but it will probably not obtain much credit at present. In some places they wash with hogs' dung for want of soap; which answers tolerably well, if the linen hangs long enough in the air to become thoroughly sweet.

What has been written on the diseases of this animal is not worth repeating. The subject however is well worth investigation.

SCROPHULA, the same as STRUMA, the king's-evil; a preternatural obstruction and erosion of the glands in the human subject and in some brute animals, as the monkey and the hog.

SCROPHULARIA AQUATICA, also called *betonica aquatica*, water-betony, greater water fig-wort.

SCROTUM, the external bag or covering of the testicles, chiefly consisting of loose skin and cellular membrane without any fat.

SCROTOCELE (from *scrotum*, and *κηλη*, tumor, a swelling); a rupture of the *scrotum*.

SCRUPIN, the same as splent. See SPLENT.

SCRUPLE, a medicinal weight consisting of 20 grains, and making the third of a drachm.

SCUTIFORME OS, the same as PATELLA; thus called from its resemblance to a shield in shape, as this term imports. Hence also,

SCUTIFORMIS CARTILAGO, is the *cartilago ensiformis*. See CARTILAGO.

SCUTUM, signifying an helmet, has, by anatomists, been applied to many parts of the body, having resemblance thereunto in figure.

SEA-WATER. The efficacy of sea-water, in removing all obstructions of the glands, has been much recommended of late. This hint may have been taken from the good effects it was observed to produce in obstinate chronical cases, on morbid horses who are sent to salt marshes, which purge the horses more by dung and urine than any other pasture, and afford afterwards a firmer flesh. The water of these marshes is for the most part brackish, and of course saturated with salts from the sea-water. See MARSHES.

SEA-VOYAGE. It is occasionally required to send horses by sea, particularly in military expeditions. The following hints of Mr. John Lawrence respecting the *passage of horses by sea* are worth attending to. "A person," says he, "who took a stallion over to America, upon deck, cautions us against that as a very dangerous practice. Previous to shipping horses, their shoes should be taken off, and their toes shortened. In a long passage, they ought fre-

quently to have mashees; sometimes with brimstone and cream of tartar, in equal quantities, mixed."

SEA-WRACK, *Fucus vesiculofus*. See WRACK.

SEAMS, or SEYMS, in horses, are certain clefts in their quarters, caused by the dryness of the foot; or by being ridden upon hard ground. They are no other than sand-cracks. See SAND-CRACK.

SEAT, in the manege, the posture or situation of a horseman upon the saddle. See HORSEMANSHIP.

SEBACEÆ GLANDULÆ. These glands are seated in the cellular membrane under the skin, and in various parts of the body they enlarge and form encysted tumours. The sebaceous humour is supplied by these glands.

SEBATES, salts formed by the union of the acid of grease, or the sebacic acid, with different bases; there are twenty-four species enumerated in M. Fourcroy's Elements of Chemistry.

SECALE, rye, a genus in Linnæus's botany. He enumerates four species.

SECESSION, the going off by secretion, as the excrements are particularly said to be formed by the secession of those parts whereof they consist, from the animal fluids, through their proper outlets.

SECONDARY FEVER, is that which arises after a crisis, or the discharge of some morbid matter, as after the declension of the small-pox, or the measles, in the human subject; and such a fever is frequently dangerous.

SECRETION (from *seerno*, to separate). The various secretions are all from the blood: but how it happens that each secretory vessel at first separated a particular part from the general mass, and always continues to do the same, is not clearly understood.

SECTION, is properly the cutting any thing whatsoever; and the manner or position in which it is done, with respect to the figure of any part, as, perpendicular, parallel, transverse, or the like. Representations of parts by *section* are often necessary to anatomical illustration.

SECUNDINES, or after-birth, is all that is brought from the uterus after delivery, as the chorion, amnion, &c. See FÆTUS.

SECUNDUM ARTEM, according to art, is a term frequently used in prescription, and denoted by the letters S. A. which are usually affixed; when the making up of the recipe in perfection requires some uncommon care and dexterity.

SECUNDUM NATURAM (*κατά φύσιν*), according or agreeably to nature, in opposition to

preternatural, or out of the common course of agency in nature.

**SECURIDACA**, hatchet-vetch, a species of **CORONILLA**.

**SEDATIVE SALT**. Homberg first obtained this salt from borax, and gave it this name, because he imagined it to possess a sedative, antispasmodic, and even a narcotic quality; and thence also called it the *narcotic salt of vitriol*. This salt is separated from borax by means of the vitriolic acid.

**SEDATIVES**, a kind of anodynes; but their particular action is, to diminish the animal energy.

**SEDUM**, house-leek, or stone-crop, a genus in Linnæus's botany. He enumerates twenty species.

**SEED**. See **SEMEN**.

**SEELING**. A horse is said to *feel*, when, upon his eye-brows, there grow white hairs, mixed with those of his usual colour, about the breadth of a farthing, which is a sure mark of old age. A horse never *feels* till he is fourteen years old, and always before he is fifteen, or sixteen at farthest: the light, sorrel, and black, feel sooner than others. Jockeys usually pull out those white hairs with pincers; but if there be so many it cannot be done, without making the horse look bald and ugly, then they colour their eye-brows, that they may not appear old. See *AGE of a horse*.

**SELENITES** (σεληνιτης). This name is given to a sort of neutral salt formed by the union of vitriolic acid with any calcareous earth. This kind of salt has been called *selenites*, probably because naturalists found its saline properties so weak that they thought it ought to be distinguished from other neutral salts by a peculiar name. Of all the neutral salts, the *selenetic* are most difficultly dissolved. Mr. Edwards, in his *Elements of Fossilogy*, places the *selenites* as a genus in the order of *Gypsum*, which is in the class of stones. His characters of *selenites* are, that they are gypsum, of regular fibres; yet he speaks of gypsum as being more properly a chemical salt.

**SELENITES**, a genus of *gypsum*, which is formed in regular fibres. Some species are really stalactites; a species called *arrow-headed*, is of the form of the head of an arrow: some of these are yellow and transparent.

**SELLA EQUINA**, **SELLA SPHENOIDES**, and **SELLA TURCICA**, are various names for the same thing. See **BRAIN** and **QUADRUPED**.

**SELIENDERS**. See **SALLENDERS**.

**SEMEIOTICA**, signs or symptoms, and how to apply them to use, so as to judge, both in a

found and a diseased body, what will be the degree, order, and effect of the constitution on the disease. Its objects are things natural, non-natural, and preternatural. The third branch of medicine.

**SEMEN**, seed, that liquor which the male injects into the uterus of the female in the act of generation. For the secretion of this fluid, the blood is carried to the testicles by the spermatic arteries, which, contrary to the constant method of nature, in framing the other arteries, are smallest where they spring from the trunk of the great artery, and immediately dilate to a considerable bigness; which evidently shews, that there could be no other design in it but to retard the velocity of the blood. We cannot suppose that the only intention was, that a small quantity of blood might go to the testicles, because then there had been no occasion for giving this artery a different figure from all others; that narrow orifice would have been sufficient of itself for that purpose, which the wideness of the artery immediately afterwards does neither hinder nor further. The orifices of the spermatic arteries are so small that they cannot be measured, as may the dimensions of the other arteries; and yet they are hardly sent from the aorta before they dilate very considerably. See **TESTICLE** and **GENERATION**.

**SEMILUNAR**, formed like a *half-moon*: of this shape are some intervening cartilages in the knee joint. For these, in the horse, see Plate XI. and the description of parts composing "*the right upper limb*," under the article **HORSE**.

**SEMILUNAR VALVES**, thus called from their resemblance in shape to a half-moon. See **HEART**.

**SEMIMARES**, half-males: so Rolfinkius, and some others, call those animals that have been castrated.

**SEMIMEMBRANOSUS**, half-membranous, is a muscle that arises tendinous from a protuberance of the ischium, immediately below the feminovosus, and is inserted by a large tendon into the upper and back part of the tibia. This is one of the four muscles that bend the leg.

**SEMIMETALLA**, half-metals, such as the marcasites, stibium, bismuth, and the like.

**SEMINALIS CAPSULA**, or seed-bag, is the husk that contains the seed of any plant.

**SEMINERVOSUS**, half-nervous, is a muscle that arises from the protuberance of the ischium, and is inserted by a round tendon into the internal part of the epiphyse of the tibia, and helps to bend the leg. See **SEMITENDINOSUS**.

**SEMI-ORBICULARIS**, the orbicular muscle



of the lips, if considered as two, called *semi-orbiculares superior* and *inferior*.

**SEMISPINALIS**, a muscle arising from half of the spinal processes of the back.

**SEMITENDINOSUS**, a muscle so called from its being half-tendinous. It is also named *feminervosus*. See Plate VI. and the description under the article **EXTERIOR**.

**SEMINAL WEAKNESS**, a disease supposed to exist in a colt or stone-horse, when there is any continued or occasional discharge from the urethra. It is called by farriers *shedding of the seed*, and this term sufficiently explains what they understand by it. But this, in fact, occurs very rarely either in the brute or human subject; for the liquid discharged (provided there be no erection or critical orgasm) is either a redundant secretion from the prostate gland, or a mere discharge of purulent fluid from the urethra. In the latter case it is rather to be considered as a gleet. See the articles **GLEET** and **GENERATION**. The remedy employed by Gibson, was an ounce of Venice turpentine, dissolved in the yolk of a egg, and formed into a ball.

**SENSIBILITY** (from *sensibilis*); the quality of being sensible, or the perceiving of any visible thing, affecting or causing an alteration in the organ of sense. The brain is the only sensible part of the body; all other parts are said to be sensible, because a portion of the medullary part of the brain is diffused over them, but they lose this quality as soon as it is rubbed off or becomes dry. As the brain is the only sensible part, except the muscular fibres, which seem to have a peculiar degree of irritability independent of the brain, though their active power appear to be increased, and continued by the brain, so that the muscular fibres contract in consequence of the irritation received by that portion of brain which covers them—these fibres are the only parts which perform their office by shortening themselves; and thus it happens that they are the only parts which contract, and which have tremulous motions upon involuntary irritations. Every part of the animal body is capable of sensation in a sound or a morbid state.

**SEPARATORS**. The teeth so called are the incisors, by which an animal separates or bites off a portion of his food for chewing. See **TEETH**.

**SEPTFOIL**, tormentilla. See **TORMENTILLA**.

**SEPTIC** (σπλιτικός), is any thing producing putrefaction; as also, a medicine that is corrosive or caustic.

**SEPTIMUS BRUTORUM**. Horses, and

almost all quadrupeds, have this muscle peculiar to them, which is not to be found in men. It is short and fleshy, inserted into the hinder part of the cornea, and not only assists in the motion of the eye, when all the muscles of that organ act in concert; but it is necessary to keep the eye suspended in creatures that feed with their heads downwards, lest, by their continual and steadfast looking towards the ground, the other muscles should be weakened, and the eyes, by that means, project too far outwards, which would be apt to impair the sight.

**SEPTUM AURIS**. See **EAR**.

**SEPTUM CORDIS**. See **HEART**.

**SEPTUM NARIUM**. See **NOSE**.

**SEPTUM TRANSVERSUM**. See **DIAPHRAGM**. All which parts are thus called from their making a partition like a cross wall, which the word imports.

**SEPTUM LUCIDUM**, the thin partition which divides the two lateral ventricles of the brain.

**SEPTUM PALATI**, i.e. **PALATUM MOLLE**.

**SERAPIAS**, bastard-hellebore, a genus in Linnæus's botany. He enumerated ten species.

**SEROSITY**. See **SEROUS**.

**SEROUS** (from *serum*, *wheny*), a term used to signify the watery part of the blood. See **BLOOD**.

**SERPEGER**, in the manege, the riding of a horse in the serpentine way, in a tread with waved turnings, like the posture of a serpent's body.

**SERPENTARIA VIRGINIANA**, *Virginian snake-root*, is the *aristolochia serpentaria*, LINN. It is brought from Virginia and Carolina. It is small, light, bushy, and composed of a number of strings or fibres issuing from one head, and matted together, of a brownish colour on the outside, and pale or yellowish within. It has an aromatic smell, somewhat like that of valerian, but more agreeable, and a warm, bitterish, pungent taste, not easily covered by a mixture with other articles.

Snake-root gives out its active matter to water or to spirit. The greatest part of its flavour is carried off either by water or by spirit in distillation; and if the quantity distilled be large, there arises with water a pale-coloured essential oil, of a strong smell, but not a strong taste: the greatest part of the camphorated pungency and bitterness of the root remains in the inspissated extract. The spirituous extract is stronger than the watery, not from its having lost less by evaporation, but from its containing the active parts of the root concentrated in a

smaller volume, its quantity amounting only to one-half of the other.

The Virginian snake-root is thought to possess tonic and antiseptic virtues, and is generally admitted as a powerful stimulant, and a warm diaphoretic, of excellent use in low and putrid fevers; it raises the pulse, promotes perspiration, resists putrefaction, and corrects a putrid disposition which is already begun. In some intermittent fevers, the bark has been found more efficacious when joined with serpentaria, than when given alone. Gibson adopts this remedy in his Dispensatory, and includes it in some of his prescriptions.

The Virginian asarum is sometimes sold for the snake-root, but the asarum is blacker.

SERPENTINE TONGUE, in the old manege, denoted a tongue in a horse that is always moving, and sometimes passes over the bit, instead of keeping in the void space called the liberty of the tongue.

SERPIGO, a tetters eruption like the herpes, or impetigo.

SERPHYLLUM, wild thyme, a species of THYMUS.

SERRATUS. Several muscles are called by this name from their resemblance in shape to a saw. For the serrated muscles in the horse, see Plates XIII. and XIV. and the description of parts forming "*the neck, shoulders, and trunk,*" under HORSE.

SERRATUS ANTICUS MINOR, in the human subject, arises thin and fleshy, from the second, third, fourth, and fifth superior ribs; and ascending obliquely, it is inserted fleshy into the process coracoides of the scapula, which it draws forward. It also helps in respiration.

SERRATUS ANTICUS MAJOR, comes from the whole basis of the scapula, and is inserted into the seven true ribs, and first of the false ribs, by so many distinct portions, representing the teeth of a saw.

SERRATUS POSTICUS INFERIOR, arises with a broad and thin tendon from the three inferior spines of the vertebræ of the back, and from the two superior of the loins; its fibres ascending obliquely, grow fleshy, and are inserted by four indentations into the four last ribs.

SERRATUS POSTICUS SUPERIOR, arises by a broad and thin tendon from the two inferior spines of the vertebræ of the neck, and the three superior of the back; and, growing fleshy, is inserted into the second, third, and fourth ribs by so many distinct indentations. These two help to draw the ribs up-

wards, and bring them to right angles with the vertebræ: and consequently make the cavity of the thorax wider and shorter.

SERUM, whey. The thin part of the blood is also called its *serum*. See BLOOD.

SESAMOIDEA OSSA, sesamoid bones. These are the little bones most frequently found at the articulations of the toes and fingers in the human subject. They exist also in the horse. See Plate VI. and the description of "*muscles, &c. on the inside of the left upper limb,*" under the article EXTERIOR.

SESQUIALTERA, a name given to that kind of fever by Helmont, which others call a *semiptertian*, or a *hæmitritæos*.

SESSILIS, a name given to any low, flat tumors, or eruptions, when they rise tardily, and are indented at the top.

SETON, a cord or number of threads laid together, and drawn through the skin by the help of a needle of a proper shape. Mr. CLARK gives the following instructions on the application and use of setons in the diseases of horses.

"Setons," says he, "are of great use in carrying off matter from deep-seated abscesses in different parts of the body. They ought at all times to be used in preference to making deep incisions into the muscular parts, for these not only disfigure horses, but are afterwards very difficult to heal up, on account of the unfavourable situation of some of those tumours, and the horizontal position of the body, which in many cases will not allow of a depending opening to carry off the matter, as in tumours on the back, withers, and the upper part of the neck, immediately behind the ears, which are very common. Nor is the horizontal position of the body the only impediment; for the natural restlessness and impatience of a horse, renders it impracticable to fix proper bandages on these elevated parts; nor will the situation of them admit of proper dressings being fixed so as to remain for any length of time. Hence the openings made into such tumours are frequently left bare, and exposed to the cold air, &c.; degenerate into very foul ulcers, and produce a very great deal of fungous flesh, which requires to be repeatedly cut away with the knife, as the strongest caustics that can be applied are not sufficient to retard its growth.

"Setons are introduced by long thin, flat, sharp-pointed needles, shaped like a dart at the point, and having, at the other extremity, an eye to receive the cord, which is to be left in the tumour. The size of the instrument may be determined by that of the tumour. and the thickness of the cord which is to follow it, and



which at all times ought to be smaller than the perforation made by the point of the needle. Every veterinary surgeon should be possessed of a number of these needles of different sizes, that is, from six to fourteen or fifteen inches long, a little bended on the flat or under side."

Mr. Clark describes the following as the readiest method of applying setons in different cases.

"When matter is found to fluctuate in the tumour, the needle, armed with a cord at the other end, is to be introduced at the upper part of it, and the sharp point of the instrument directed to, and brought out at, the under or lowermost part of the tumour, including the whole length of it; or, if needful, through the sound muscular flesh on the under part, in order to procure a depending orifice for the matter to run freely off. The cord should be dipped in some digestive ointment, and then tied together at both ends with a thread, in order to prevent its slipping out; but if, from the length of the perforation, the cord should not admit of being tied together at the ends, a small button of wood, or some such substance, may be fixed at each end; only, from this circumstance, the cord will require, when shifted occasionally, to be drawn upwards and downwards; whereas, when the ends of it are tied together, it forms a circle, and may always be shifted downwards to the lower orifice; when the matter in the tumour appears to be wholly discharged, or dried up, and no thickness appearing but where the cord is, it may then be drawn out, and the orifices suffered to heal up.

"When the needle for introducing the seton is to pass near to any large blood-vessels, or nerves, in order to prevent the chance of their being wounded, it may be concealed in a canula, open at both ends: and, after an opening is made at the upper part of the tumour, sufficient to admit the needle, with its canula, it may then be directed, with safety, past the blood-vessels, &c. We may then push the needle forward through the canula to the opposite side of the tumour, and having only the common teguments to perforate, all danger will be at an end."

The importance of the seton in treating abscesses on the withers, &c. is shewn by Mr. Clark in the following way. "The common method," says he, "of treating those large tumours which are seated on the upper part of the neck, immediately behind the ears, generally known by the name of the *poll-evil*, and also those which are seated on the withers, or upper parts of the shoulders, is exceedingly improper. They are either allowed

to break of themselves, or are opened the whole length of the tumour on the upper part; in which situation, especially in the poll-evil, when the head is always kept in an erect position, the matter contained in the tumour cannot be discharged from it, but is retained in the bottom of the wound, and exposed to the external air, &c. Here it soon acquires a most corroding quality, and produces a large and fordid fistulous ulcer; a great quantity of fungous flesh is also produced, and this requires to be repeatedly extirpated with the knife, or other means; and hence the horse is greatly disfigured, the cure becomes both tedious and uncertain, and is seldom radical. In some cases, I have known the vertebræ of the neck affected by the sharpness of the confined matter, forming lodgments there, and, after great trouble and expence, the horses were obliged to be put to death at last."

Mr. Clark, no doubt with great truth, avers, that these tumours are easily and speedily cured by the use of setons, as above described; and that without any loss of substance, or even disfiguring of the parts. "Of a number of cases, in my practice," says he, "where this operation has succeeded with great expedition in curing these tumours, I shall only mention the following.

"About eight years ago, an Arabian horse, belonging to a gentleman in this place, had a large tumour seated a little on one side of the withers, or upper part of the shoulder; it was forwarded by applying emollient poultices; and, as soon as the matter was perceived to fluctuate in the tumour, a large seton needle, armed with a cord at the other end (as described above), was introduced at the upper part of the swelling, and brought out at the under or lowermost part of it; the matter was discharged at the lower orifice in a very short time, the tumour was by that means soon dissolved, and in a few weeks it was entirely healed up, without any scar or blemish remaining, farther than a little baldness about the lower orifice, occasioned by the sharpness of the matter; but this likewise soon disappeared, and not the least trace of the disorder remained."

Another case is described by Mr. Clark as follows. "A coach-horse (belonging to a nobleman in the neighbourhood) had a large tumour a little behind the ears, on the neck, which, as formerly observed, is called the *poll-evil*; the tumour extended to both sides of the neck, and was divided in the middle by the mane; the tumour had been opened on one side, in a very superficial manner, by a farrier

in the country before the matter in it was sufficiently digested: after applying a few emollient poultices, in order to ripen it, a strong seton needle, as already described, was introduced at the upper part of it, almost close to the mane, and, after passing it through the bottom of the tumour, which was very deep, the needle was brought out through the sound muscular parts below the tumour, in order to procure a depending orifice for the matter to run freely off. The same operation was likewise performed on the opposite side, beginning near the mane, and finished in the same manner. In a few weeks the cure was completed. The horse ran for several years in the same nobleman's carriage, without the smallest vestige of his former disorder."

The history of these cases tends, Mr. Clark thinks, to shew with what facility and expedition such tumours may be cured by the use of *setons* in preference to the common methods used, and even recommended by authors. This practice was, after opening these tumours by deep incisions, and pouring into them the most corrosive mixtures, made *scalding* hot (see SCALDING), to employ a course of irritating applications, by which the poor animals were tortured for a considerable time; and, in the end, were so disfigured by the loss of substance as to have been generally rendered unfit for any thing but the meanest drudgery.

"Deep-seated *abscesses*," Mr. Clark observes, "are cured in the same manner by the use of setons. After tracing their sinuses or cavities with a long leaden probe (which will yield easily, without forcing its way through the cellular membrane, or taking a direction between the interstices of the muscles), the needle, armed with a cord, should follow the direction of the sinews to the most depending part; and, in case there should be two or more sinuses, which sometimes happens, each of them should be treated in the same manner, in order to obtain a depending orifice for a free discharge of the matter, and which, being once procured, this method will completely cure the disease."

SETTERWORT, a species of HELLEBORUS.

SEVIL, a part of the branches of a bridle. It is a nail turned round like a ring, with a large head made fast in the lower part of the branch called *gargouille*. See BANQUET.

SEVUM OVILLUM, mutton suet, this is retained in the college Pharmacopœia, its preparation is described among the more simple preparations. In that state, it is an ingredient in several plasters and ointments.

SEXUAL SYSTEM, in botany. This is

founded on a discovery that there is in vegetables, as well as in animals, a distinction of the sexes. It was invented by Linnæus, professor of physic and botany at Upsal. The several parts of *fructification*, viz. 1. the *calyx*, or flower-cup; 2. the *corolla*, or flower-leaf; 3. the *stamina*, or chives; 4. the *pistillum*, or pointal; 5. the *pericarpium*, or seed-vessel; 6. the *femina*, or seeds; 7. the *receptacle*, or base, on which the fructification is seated; having been observed with more accuracy, since the discovery of the uses for which nature has assigned them, a new set of principles have been derived from them; by means of which the distribution of plants has been brought to a greater precision, and rendered more conformable to true philosophy in this system, than in any one of those which preceded it. By this system, plants are disposed according to the number, proportion, and situation of the stamina and pistilla: the whole body of vegetables is divided into twenty-four classes; these are again subdivided into orders, the orders into genera, the genera into species, and the species into varieties, where there are any worthy of note. In the elementary books on botany, there is usually a table that exhibits in one view the classes and orders as they stand in the system.

SHAKLE, the name of a vein that runs across the back-sinews of a horse. See the article BLOOD-VESSELS.

SHAMBRIER, in the manege, a long thong of leather made fast to the end of a cane or stick, in order to whip a horse if he refuse to obey the rider.

SHANK OF A HORSE, that part of the fore-leg which is between the knee and the fetlock or pastern-joint. The larger and broader the shank is the better. It is known to be so, by the back sinew being at a distance from the bone, or well separated from it, and having no kind of swelling betwixt it and the bone, which may cause the leg to appear round. See BONES.

SHAPE OF A HORSE. See HORSE.

SHARE BONE. See BONES.

SHAVEGRASS, i. e. *equisetum hyemale*, or rough horse-tail, a species of EQUISETUM.

SHEDDING OF THE HAIR, in horses. See MOULTING.

SHEDDING OF THE SEED, in horses. See the article SEMINAL WEAKNESS.

SHEEP, in zoology, *ovis*, a genus of the *mammalia* class, and of the order of *pecora*. Linnæus enumerates three species, which perhaps are only varieties, viz. 1. the *ovis aries*, or ram sheep; 2. the *ovis Guineensis*, or Guinea sheep; and, 3. the *ovis Strepsiceros*, or Cretan sheep.



With their description however, as objects of natural history, we have nothing to do. Yet before we present to the reader such an account of the diseases of this most valuable animal as the defective state of veterinary knowledge is capable of furnishing, we shall introduce a few observations on the subject as it applies to the interests of the agriculturist.

The best sort of sheep for fine wool are those bred in Herefordshire, Devonshire, and Worcestershire; but they are small, and black-faced, and bear but a small quantity. Warwickshire, Leicestershire, Buckingham, and Northamptonshire, breed a large boned sheep, of the best shape and deepest wool we have. The marshes of Lincolnshire breed a very large kind of sheep, but their wool is not good, unless the breed be mended by bringing in sheep of other counties among them, which is a scheme of late very profitably followed there. In this county, it is no uncommon thing to give fifty guineas for a ram, and a guinea for the admission of an ewe to one of these valuable males, or twenty guineas for the use of it for a certain number of ewes during one season. Suffolk also breeds a very valuable kind of sheep. The northern counties in general breed sheep with long but hairy wool: however, the wool which is taken from the neck and shoulders of the Yorkshire sheep is used for mixing with Spanish wool in some of their finest cloths.

Wales bears a small hardy kind of sheep, which has the best tasted flesh, but the worst wool of all. Nevertheless it is of more extensive use than the finest Segovian fleeces; for the benefit of the flannel manufacture is universally known. The sheep of Ireland vary like those of Great Britain: those of the south and east being large and their flesh rank; those of the north and the mountainous parts small and their flesh sweet. The fleeces in the same manner differ in degrees of value. Scotland breeds a small kind, and their fleeces are coarse.

But the new *Leicestershire breed* is by far the most profitable breed in the island. Joseph Altom of Clifton, who raised himself from a plough-boy, was the first who distinguished himself in the midland counties of England for a superior breed of sheep. How he improved his breed is not known; but it was customary for eminent farmers in his time to go to Clifton in summer to choose and purchase ram-lambs, for which they paid two or three guineas. This man was succeeded by Mr. Bakewell; and it may reasonably be supposed that the breed, by means of Altom's stock, had passed the first stage of improvement before Mr. Bakewell's

time. Still, however, it must be acknowledged, that the Leicestershire breed of sheep owes its present high state of improvement to the ability and care of Mr. Bakewell.

This breed surpasses every other in beauty of form; they are full and weighty in the fore quarters; and are remarkable for smallness of bone. Mr. Marshall, who has been of so much benefit to agriculture and his country by his publications, informs us, in his *Rural Economy of the Midland Counties*, that he has seen a rib of a sheep of this breed contrasted with one of a Norfolk sheep: the disparity was striking; the latter nearly twice the size; while the meat which covered the former was three times the thickness: consequently the proportion of meat to bone was in the one incomparably greater than in the other. Therefore, in this point of view, the improved breed has a decided preference: for surely while mankind continue to eat flesh and throw away bone, the former must be, to the consumer at least, the more valuable.

The criterions of good and bad flesh while the animal is alive differ in different species, and are not properly settled in the same species. One superior breeder is of opinion, that if the flesh is not loose, it is of course good; holding, that the flesh of sheep is never found in a state of hardness, like that of ill-fleshed cattle: while others make a fourfold distinction of the flesh of sheep; as looseness, mellowness, firmness, hardness: considering the first and the last equally exceptionable, and the second and third equally desirable; a happy mixture of the two being deemed the point of perfection.

The flesh of sheep, when slaughtered, is well known to be of various qualities. Some is composed of large coarse grains, interspersed with wide empty pores like a sponge; others, of large grains, with wide pores filled with fat; others, of fine close grains, with smaller pores filled with fat: and a fourth, of close grains, without any intermixture of fatness.

The flesh of sheep, when dressed, is equally well known to possess a variety of qualities: some mutton is coarse, dry, and insipid; a dry sponge, affording little or no gravy of any colour. Another sort is somewhat firmer, imparting a light-coloured gravy only. A third plump, short, and palatable; affording a mixture of white and red gravy. A fourth likewise plump and well-flavoured, but discharging red gravy, and this in various quantities.

It is likewise observable, that some mutton, when dressed, appears covered with a thick, tough, parchment-like integument; others with

a membrane comparatively fine and flexible. But these, and some of the other qualities of mutton, may not be wholly owing to breed, but in part to the age and the state of fatness at the time of slaughter. Examined in this light, whether we consider the degree of fatness, or their natural propensity to a state of fatness, even at an early age, the improved breed of Leicestershire sheep appear with many superior advantages.

The degree of fatness to which the individuals of this breed are capable of being raised, will perhaps appear incredible to those who have not had an opportunity of being convinced by their own observation. "I have seen widders," says Mr. Marshall, "of only two shear (two to three years old) so loaded with fat as to be scarcely able to make a run; and whose fat lay so much without the bone, it seemed ready to be shaken from the ribs on the smallest agitation.

"It is common for the sheep of this breed to have such a projection of fat upon the ribs, immediately behind the shoulder, that it may be easily gathered up in the hand, as the flank of a fat bullock. Hence it has gained, in technical language, the name of the *fore-flank*; a point which a modern breeder never fails to touch in judging of the quality of this breed of sheep.

"What is, perhaps, still more extraordinary, it is not rare for the rams, at least of this breed, to be 'cracked on the back;' that is, to be cloven along the top of the chine, in the manner fat sheep generally are upon the rump. This mark is considered as an evidence of the best blood.

"Extraordinary, however, as are these appearances while the animals are living, the facts are still more striking after they are slaughtered. At Litchfield, in February, 1785, I saw a fore quarter of mutton, fatted by Mr. Princep of Croxall, and which measured upon the ribs four inches of fat. It must be acknowledged, however, that the Leicestershire breed do not produce so much wool as most other long-woolled sheep."

The practice of letting rams by the season is now become extremely profitable. "Mr. Bakewell, this year (1789) makes," says Mr. Marshall, "twelve hundred guineas by three rams (brothers, we believe); two thousand of seven; and of his whole letting, full three thousand guineas!"

Beside this extraordinary sum made by Mr. Bakewell, there are six or seven other breeders who make from five hundred to a thousand guineas each. The whole amount of monies produced that year in the midland counties, by letting

rams of the modern breed for one season only, is estimated, by those who are adequate to the subject, at the almost incredible sum of ten thousand pounds.

Rams previous to the season are reduced from the cumbrous fat state in which they are shown. The usual time of sending them out is the middle of September. They are conveyed in carriages of two wheels with springs, or hung in slings, 20 or 30 miles a-day, sometimes to the distance of 200 or 300 miles. They are not turned loose among the ewes, but kept apart in a small inclosure, where a couple of ewes only are admitted at once. When the season is over, every care is taken to make the rams look as fat and handsome as possible.

In the choice of ewes the breeder is led by the same criterions as in the choice of rams. Breed is the first object of consideration. Superiority, in any species or variety of live-stock, cannot be attained with any degree of certainty, let the male be ever so excellent, unless the females employed likewise inherit a large proportion of the genuine blood, be the species or variety what it may. Hence no prudent man ventures to give the higher prices for the Dishley rams, unless his ewes are deeply tinged with the Dishley blood. Next to breed is flesh, fat, form, and wool.

After the lambs are weaned, the ewes are kept in common feeding places, without any alteration of pasture, previous to their taking the ram. In winter they are kept on grass, hay, turnips, and cabbages. As the heads of the modern breed are much finer than most others, the ewes lamb with less difficulty.

The female lambs, on being weaned, are put to good keep, but have not such high indulgence shewn them as the males, the prevailing practice being to keep them from the ram the first autumn.

At weaning time, or previously to the admission of the ram, the ewes are culled, to make room for the thaves or shearlings, whose superior blood and fashion intitle them to a place in the breeding flock. In the work of culling, the ram-breeder and the mere grazier go by somewhat different guides. The grazier's guide is principally age, seldom giving his ewes the ram after they are four shear. The ram-breeder, on the contrary, goes chiefly by merit; an ewe that has brought him a good ram or two is continued in the flock so long as she will breed. There are instances of ewes having been prolific to the tenth or twelfth year; but in general the ewes of this breed go off at six or seven shear.



In the practice of some of the principal ram-breeders, the culling ewes are never suffered to go out of their hands until after they are slaughtered, the breeders not only fattening them, but having them butchered, on their premises. There are others, however, who sell them; and sometimes at extraordinary prices. Three, four, and even so high as ten, guineas each have been given for these outcasts.

There are in the flocks of several breeders ewes that would fetch at auction twenty guineas each. Mr. Bakewell is in possession of ewes which, if they were now put up to be sold to the best bidder, would, it is estimated, fetch no less than fifty each, and perhaps, through the present spirit of contention, much higher prices.

The following instructions for purchasing sheep, we hope, will be deemed acceptable. The farmer should always buy his sheep from a worse land than his own, and they should be big-boned, and have a long greasy wool, curling close and well. These sheep always breed the finest wool, and are also the most approved of by the butcher for sale in the market. For the choice of sheep to breed, the ram must be young, and his skin of the same colour with his wool, for the lambs will be of the same colour with his skin. He should have a large long body; a broad forehead, round, and well rising; large eyes; and straight and short nostrils. The polled sheep, that is, those which have no horns, are found to be the best breeders. The ewe should have a broad back; a large bending neck; small, but short, clean, and nimble legs; and a thick, deep wool covering her all over.

To know whether they be sound or not, the farmer should examine the wool that none of it be wanting, and see that the gums be red, the teeth white and even, and the brisket-skin red, the wool firm, the breath sweet, and the feet not hot. Two years old is the best time for beginning to breed; and their first lambs should not be kept too long, to weaken them by suckling, but be sold as soon as conveniently may be. They will breed advantageously till they are seven years old. The farmers have a method of knowing the age of a sheep, as a horse's is known, by the mouth. When a sheep is one shear, as they express it, it has two broad teeth before; when it is two shear, it will have four; when three, six; and when four, eight. After this their mouths begin to break.

The difference of land makes a very great difference in the sheep. The fat pastures breed straight tall sheep, and the barren hills and downs breed square short ones; woods and mountains breed tall and slender sheep; but the

best of all are those bred upon new-ploughed land and dry grounds. On the contrary, all wet and moist lands are bad for sheep, especially such as are subject to be overflowed, and to have sand and dirt left on them. The salt marshes are, however, an exception to this general rule, for their saltness makes amends for their moisture; salt, by reason of its drying quality, being of great advantage to sheep.

As to the time of putting the rams to the ewes, the farmer must consider at what time of the spring his grafs will be fit to maintain them and their lambs, and whether he has turnips to do it till the grafs comes; for very often both the ewes and lambs are destroyed by the want of food; or if this does not happen, if the lambs are only stinted in their growth by it, it is an accident that they never recover. The ewe goes twenty weeks with lamb, and according to this it is easy to calculate the proper time. The best time for them to yearn is in April, unless the owner has very forward grafs or turnips, or the sheep are field sheep. Where you have not inclosures to keep them in, then it may be proper they should yearn in January, that the lambs may be strong by May-day, and be able to follow the dam over the fallows and water-furrows; but then the lambs that come so early must have a great deal of care taken of them, and so indeed should all other lambs at their first falling, else while they are weak the crows and magpies will pick their eyes out.

When the sheep are turned into fields of wheat or rye to feed, it must not be too rank at first, for if it be, it generally throws them into scourings. Ewes that are big should be kept but bare, for it is very dangerous to them to be fat at the time of their bringing forth their young. They may be well fed, indeed, like cows, a fortnight beforehand, to put them in heart, but by no means made fat.

The feeding sheep with turnips is one great advantage to the farmers. When they are made to eat turnips they soon fatten, but there is some difficulty in bringing this about. The old ones always refuse them at first, and will sometimes fast three or four days, till almost famished; but the young lambs fall to at once. The common way, in some places, of turning a flock of sheep at large into a field of turnips, is very disadvantageous, for they will thus destroy as many in a fortnight as would keep them a whole winter. There are three other ways of feeding them on this food, all of which have their several advantages.

The first way is to divide the land by hurdles, and allow the sheep to come upon such a

portion only at a time as they can eat in one day, and so advance the hurdles farther into the ground daily till all be eaten. This is infinitely better than the former random method; but they never eat them clean even this way, but leave the bottoms and outsides scooped in the ground: the people pull up these indeed with iron crooks, and lay them before the sheep again, but they are commonly so fouled with the creature's dung and urine, and with the dirt from their feet, that they do not care for them; they eat but little of them, and what they do eat does not nourish them like the fresh roots.

The second way is by inclosing the sheep in hurdles, as in the former; but in this they pull up all the turnips which they suppose the sheep can eat in one day, and daily remove the hurdles over the ground whence they have pulled up the turnips: by this means there is no waste, and less expence, for a person may in two hours pull up all those turnips; the remaining shells of which would have employed three or four labourers a-day to get up with their crooks out of the ground trodden hard by the feet of the sheep: and the worst is, that as in the method of pulling up first, the turnips are eaten up clean; in this way, by the hook, they are wasted, the sheep do not eat any great part of them, and when the ground comes to be tilled afterwards for a crop of corn, the fragments of the turnips are seen in such quantities on the surface, that half the crop at least seems to have been wasted.

The third manner is to pull up the turnips, and remove them in a cart or waggon to some other place, spreading them on a fresh place every day; by this method the sheep will eat them up clean, both root and leaves. The great advantage of this method is, when there is a piece of land not far off which wants dung more than that where the turnips grew, which perhaps is also too wet for the sheep in winter, and then the turnips will, by the too great moisture and dirt of the soil, sometimes spoil the sheep, and give them the rot. Yet such ground will often bring forth more and larger turnips than dry land, and when they are carried off, and eaten by the sheep on ploughed land, in dry weather, and on green sward in wet weather, the sheep will succeed much better; and the moist soil where the turnips grew not being trodden by the sheep, will be much fitter for a crop of corn than if they had been fed with turnips on it. The expence of hurdles, and the trouble of moving them, are saved in this case, which will counterbalance at

least the expence of pulling the turnips and carrying them to the places where they are to be eaten. They must always be carried off for oxen.

The *diseases* to which sheep are subject are these: rot, red-water, foot-rot and hoving, scab, dunt, rickets, fly-struck, flux, and bursting. Of each of these we shall give the best description in our power, with the most approved remedies.

1. The *rot*, which is a very pernicious disease, has of late engaged the attention of scientific farmers. But neither its nature nor its cause has yet been fully ascertained. Dr. Hamilton's valuable and judicious observations will be found under the article ROT. Some others have, however, made remarks upon it, which ought to be circulated, as they may perhaps furnish an antidote for this malignant distemper, or be the means of leading to some efficacious remedy. Some have supposed the rot owing to the quick growth of grass or herbs that grow in wet places. Without premising, that all-bounteous Providence has given to every animal its peculiar taste, by which it distinguishes the food proper for its preservation and support, if not vitiated by fortuitous circumstances, it seems very difficult to discover on philosophical principles why the quick growth of grass should render it noxious, or why any herb should at one season produce fatal effects, by the admision of pure water only into its component parts, which at other times is perfectly innocent, although brought to its utmost strength and maturity by the genial influence of the sun. Besides, the constant practice of most farmers in the kingdom, who with the greatest security feed their meadows in the spring, when the grass shoots quick and is full of juices, militates directly against this opinion.

Mr. Arthur Young, to whom agriculture is much indebted, ascribes this disease to moisture. In confirmation of this opinion, which has been generally adopted, we are informed, in the Bath Society's papers, vol. VII. art. xlvi. by a correspondent, that there was a paddock adjoining to his park which had for several years caused the rot in most of the sheep which were put into it. In 1769 he drained it, and from that time his sheep were free from this malady. But there are facts which render it doubtful that moisture is the sole cause. We are told, the dry limed land in Derbyshire will produce the rot as well as water meadows and stagnant marshes; and in some wet grounds sheep sustain no injury for many weeks.

Without attempting to enumerate other hypotheses which the ingenious have formed on this



subject, we shall pursue a different method in order to discover the cause. On dissecting sheep that die of this disorder, a great number of insects called *flukes* are found in the liver. That these flukes are the cause of the rot, therefore, is evident; but to explain how they come into the liver is not so easy. It is probable that they are swallowed by the sheep along with their food while in the egg state. The eggs deposited in the tender germ are conveyed with the food into the stomach and intestines of the animals, whence they are received into the lacteal vessels, carried off in the chyle, and pass into the blood; nor do they meet with any obstruction until they arrive at the capillary vessels of the liver. Here, as the blood filtrates through the extreme branches, answering to those of the *vena porta* in the human body, the fecerning vessels are too minute to admit the impregnated ova, which, adhering to the membrane, produce those animalculæ that feed upon the liver and destroy the sheep. They much resemble the flat fish called plaise, are sometimes as large as a silver two-pence, and are found both in the liver and in the gall-duct which conveys the bile from the liver to the duodenum or lower intestines.

The common and most obvious objection to that opinion is, that this insect is never found but in the liver, or in some parts of the viscera, of sheep that are diseased more or less; and that they must therefore be bred there. But this objection will lose its force, when we consider that many insects undergo several changes, and exist under forms extremely different from each other. Some of them may therefore appear and be well known under one shape, and not known to be the same under a second or third. The fluke may be the last state of some aquatic insect which we at present very well know under one or other of its previous forms.

If this be admitted, it is easy to conceive that sheep may, on wet ground especially, take multitudes of these ova or eggs in with their food; and that the stomach and viscera of the sheep being a proper nidus for them, they of course hatch, and appearing in their fluke or last state, feed on the liver of the animal, and occasion this disorder.

It is a singular fact, "that no ewe ever has the rot while she has a lamb by her side." The reason of this may be, that the impregnated ovum passes into the milk, and never arrives at the liver. The rot is fatal to sheep, hares, and rabbits, and sometimes to calves; but never infects animals of a larger size.

Miller says that parsley is a good remedy for the rot in sheep. Perhaps a strong decoction of this plant, or the oil extracted from its seeds, might be of service. Salt is also a useful remedy. It seems to be an acknowledged fact, that salt marshes never produce the rot. Salt indeed is pernicious to most insects. Common salt and water expel worms from the human body; and sea-weed, if laid in a garden, will drive away insects; but if the salt is separated by steeping it in the purest spring-water for a few days, it abounds with animalculæ of various species.

Lisle, in his book of husbandry, informs us of a farmer who cured his whole flock of the rot by giving each sheep a handful of Spanish salt for five or six mornings successively. The hint was probably taken from the Spaniards, who frequently give their sheep salt to keep them healthy. On some farms perhaps the utmost caution cannot always prevent this disorder. In wet and warm seasons the prudent farmer will remove his sheep from the lands liable to rot. Those who have it not in their power to do this may give each sheep a spoonful of common salt, with the same quantity of flour, in a quarter of a pint of water, once or twice a-week. When the rot is recently taken, the same remedy given four or five mornings successively will in all probability effect a cure. The addition of the flour and water (in the opinion of Mr. Price of Salisbury, to whose excellent paper in the Bath Society's Transactions we owe ourselves much indebted) will not only abate the pungency of the salt, but dispose it to mix with the chyle in a more gentle and efficacious manner.

A farmer of a considerable lordship in Bohemia visiting the hot-wells of Carlsbad, related how he preserved his flocks of sheep from the mortal distemper which raged in the wet year 1769, in which so many perished. His preservative was very simple and very cheap: "He fed them every night, when turned under a shed, cover, or stables, with hashed fodder straw; and, by eating it greedily, they all escaped."

2. *Red-water* is a disorder most prevalent on wet grounds. I have heard (says Mr. Arthur Young) that it has sometimes been cured by tapping, as for a dropsy. This operation is done on one side of the belly towards the flank, just below the wool.

3. *The foot-rot and hoving*, which is very common on low fenny grounds, is cured by keeping the part clean, and lying at rest in a dry pasture.

4. *The scab* is a cutaneous disease owing to

an impurity of the blood, and is most prevalent in wet lands or in rainy seasons. It is cured by tobacco-water, brimstone and alum, boiled together, and then rubbed over the sheep. If only partial, tar and greafe may be sufficient. But the simplest and most efficacious remedy for this disease was communicated to the Society for the Encouragement of Arts, &c. by sir Joseph Banks.

"Take one pound of quicksilver, half a pound of Venice turpentine, half a pint of oil of turpentine, and four pounds of hogs-lard. Let them be rubbed in a mortar till the quicksilver is thoroughly incorporated with the other ingredients; for the proper mode of doing which, it may be proper to take the advice, or even the assistance, of some apothecary or other person used to make such mixtures.

"The method of using the ointment is this: Beginning at the head of the sheep, and proceeding from between the ears along the back to the end of the tail, the wool is to be divided in a furrow till the skin can be touched; and as the furrow is made, the finger slightly dipped in the ointment is to be drawn along the bottom of it, where it will leave a blue stain on the skin and adjoining wool: from this furrow similar ones must be drawn down the shoulders and thighs to the legs, as far as they are woolly; and if the animal is much infected, two more should be drawn along each side parallel to that on the back, and one down each side between the fore and hind legs.

"Immediately after being dressed, it is usual to turn the sheep among other stock, without any fear of the infection being communicated; and there is scarcely an instance of a sheep suffering any injury from the application. In a few days the blotches dry up, the itching ceases, and the animal is completely cured: it is generally, however, thought proper not to delay the operation beyond Michaelmas.

"5. The *hippobosca ovina*, called in Lincolnshire *sheep fagg*, an animal well known to all shepherds, which lives among the wool, and is hurtful to the thriving of sheep both by the pain its bite occasions and the blood it sucks, is destroyed by this application, and the wool is not at all injured. Our wool-buyers purchase the fleeces on which the stain of the ointment is visible, rather in preference to others, from an opinion that the use of it having preserved the animal from being vexed either with the scab or faggs, the wool is less liable to the defects of joints or knots; a fault observed to proceed from every sudden stop in the thriving

of the animal, either from want of food or from disease.

"This mode of curing was brought into that part of Lincolnshire where sir John's property is situated about twelve years ago, by Mr. Stephenson of Mareham, and is now so generally received, that the scab, which used to be the terror of the farmers, and which frequently deterred the more careful of them from taking the advantage of pasturing their sheep in the fertile and extensive commons with which that district abounds, is no longer regarded with any apprehension: by far the most of them have their flock anointed in autumn, when they return from the common, whether they show any symptoms of scab or not; and having done so, conclude them safe for some time from either giving or receiving infection. There are people who employ themselves in the business, and contract to anoint our large sheep at five shillings a score, insuring for that price the success of the operation; that is, agreeing, in case many of the sheep break out afresh, to repeat the operation gratis even some months afterwards."

6. The *dunt*, or *gid*, is a distemper caused by a bladder of water, or hydatid, in the head. No cure for this has yet been discovered. See *GID*.

7. The *rickets* is a hereditary disease for which no antidote is known. The first symptom is a kind of lightheadedness, which makes the affected sheep appear wilder than usual when the shepherd or any person approaches him. He bounces up suddenly from his laze, and runs to a distance, as though he were pursued by dogs. In the second stage the principal symptom is the sheep's rubbing himself against trees, &c. with such fury as to pull off his wool and tear away his flesh. "The distressed animal has now a violent itching in his skin, the effect of an highly inflamed blood; but it does not appear that there is ever any cutaneous eruption or salutary critical discharge. In short, from all circumstances, the fever appears now to be at its height."—The last stage of this disease "seems only to be the progress of dissolution, after an unfavourable crisis. The poor animal, as condemned by Nature, appears stupid, walks irregularly (whence probably the name *rickets*), generally lies, and eats little: these symptoms increase in degree till death, which follows a general consumption, as appears upon dissection of the carcase; the juices and even solids having suffered a general dissolution."

In order to discover the seat and nature of this disease, sheep that die of it ought to be



diseased. This is said to have been done by one gentleman, Mr. Beal; and he found in the brain or membranes adjoining a maggot about a quarter of an inch long, and of a brownish colour. A few experiments might easily determine this fact.

8. The *fly-struck* is cured by clipping the wool off as far as infected, and rubbing the parts dry with lime or wood-ashes: curriers oil will heal the wounds, and prevent their being struck any more; or they may be cured with care, without clipping, with oil of turpentine, which will kill all the vermin where it goes; but the former is the surest way.

9. The *flux* is another disease to which sheep are subject. The best remedy is said to be, to house the sheep immediately when this distemper appears, to keep them very warm, and feed them on dry hay, giving them frequent glisters of warm milk and water. The cause of that distemper is either their feeding on wet lands, or on grafs that is become mossy by the lands having been fed many years without being ploughed. When the farmer perceives his sheep-walks to become mossy, or to produce bad grafs, he should either plough or manure with hot lime, making kilns either very near or in the sheep-walks, because the hotter the lime is put on, the sweeter the grafs comes up, and that early in the year.

10. *Bursting*, or as it is called in some places the *blast*, attacks sheep when driven into fresh grafs or young clover. They overeat themselves, foam at the mouth, swell exceedingly, breathe very quick and short, then jump up, and instantly fall down dead. In this case, the only chance of saving their life is by stabbing them in the maw with an instrument made for the purpose. The instrument is a hollow tube, with a pointed weapon passing through it. A hole is made with the pointed weapon; which is immediately withdrawn, and the hole is kept open by inserting the tube till the wind is discharged.

11. Sheep are infested with *worms in the nose* called *æstrus ovis*, and produced from the egg of a large two-winged fly. The frontal sinuses above the nose in sheep and other animals are the places where these worms live and attain their full growth. These sinuses are always full of a soft white matter, which furnishes these worms with a proper nourishment, and are sufficiently large for their habitation; and when they have here acquired their destined growth, in which they are fit to undergo their changes for the fly-state, they leave their old habitation,

and, falling to the earth, bury themselves there; and when these are hatched into flies, the female, when she has been impregnated by the male, knows that the nose of a sheep or other animal is the only place for her to deposit her eggs, in order to their coming to maturity. Mr. Vallisnieri, to whom the world owes so many discoveries in the insect class, is the first who has given any true account of the origin of these worms. But though their true history had been till that time unknown, the creatures themselves were very early discovered, and many ages since were esteemed a good medicine in epilepsies.

The fly produced from this worm has all the time of its life a very lazy disposition, and does not like to make any use either of its legs or wings. Its head and corselet together are about as long as its body, which is composed of five rings, streaked on the back; a pale yellow and brown are there disposed in irregular spots; the belly is of the same colours, but they are there more regularly disposed, for the brown here makes three lines, one in the middle, and one on each side, and all the intermediate spaces are yellow. The wings are nearly of the same length with the body, and are a little inclined in their position, so as to lie upon the body: they do not, however, cover it; but a naked space is left between them. The ailerons or petty wings which are found under each of the wings are of a whitish colour, and perfectly cover the balancers, so that they are not to be seen without lifting up these.

The fly will live two months after it is first produced, but will take no nourishment of any kind; and possibly it may be of the same nature with the butterflies, which never take any food during the whole time of their living in that state, as Reaumur asserts.

To find a proper composition for marking sheep is a matter of great importance, as great quantities of wool are every year rendered useless by the pitch and tar with which they are usually marked. The requisite qualities for such a composition are, that it be cheap, that the colour be strong and lasting, so as to bear the changes of weather, and not to injure the wool. Dr. Lewis recommends for this purpose melted tallow, with so much charcoal in fine powder stirred into it as is sufficient to make it of a full black colour, and of a thick consistence. This mixture, being applied warm with a marking iron, on pieces of flannel, quickly fixed or hardened, bore moderate rubbing, resisted the sun and rain, and yet could be washed out freely

with soap, or ley, or stale urine. In order to render it still more durable, and prevent its being rubbed off, with the tallow may be melted an eighth, sixth, or fourth, of its weight of tar, which will readily wash out along with it from the wool.

**SHELL-TOOTHED**, an epithet applied to a horse that, from five years to old age, naturally, and without any artifice, bears the mark in all his fore-teeth; inasmuch that, at twelve or fifteen, he appears with the mark of a horse that is not yet six. For in the nippers of other horses the mark disappears towards the sixth year, in consequence of the wearing of the tooth. About the same age it is half worn out in the middling teeth, and towards the eighth year it disappears in the corner teeth; but after a shell-toothed horse has marked, he marks still equally in the nippers, the middling, and the corner teeth. The reason is, that, having harder teeth than other horses, his teeth do not wear, nor lose the black spot.

Amongst the foreign horses, we find a great many shell-toothed horses, and generally the mares are more apt to be so than the horses.

**SHINGLES**, a species of erysipelas common to the human skin. It consists of small pimples, which soon form little vesicles, that dry and become scaly. This disorder usually spreads farther than its first limits, and sometimes encircles the loins.

**SHOEING**. Horses, and some other animals destined to labour, are shod with iron, in order to defend and preserve their hoofs. As feet differ, so should shoes accordingly. In a judicious treatise on this subject by Mr. Clark of Edinburgh, the common form of shoes and the method of shoeing are, with great reason, totally condemned, and a new method recommended, which seems founded on rational principles, and to have been confirmed by experience.

"In preparing the foot for the shoe according to the common method, our author observes, the frog, the sole, and the bars or binders, are pared so much that the blood frequently appears. The common shoe by its form (being thick on the inside of the rim, and thin upon the outside), must of consequence be made concave or hollow on that side which is placed immediately next the foot, in order to prevent its resting upon the sole. The shoes are generally of an immoderate weight and length, and every means is used to prevent the frog from resting upon the ground, by making the shoe heels thick, broad,

and strong, or raising cramps or caukers on them.

"From this form of the shoe, and from this method of treating the hoof, the frog is raised to a considerable height above the ground, the heels are deprived of that substance which was provided by nature to keep the crust extended at a proper wideness, and the foot is fixed as it were in a vice.

"By the pressure from the weight of the body, and resistance from the outer edges of the shoe, the heels are forced together, and retain that shape impressed upon them, which it is impossible ever afterwards to remove; hence a contraction of the heels, and of course lameness. But farther—

"The heels, as has been observed, being forced together, the crust presses upon the processes of the coffin and extremities of the nut-bone: the frog is confined, and raised so far from the ground, that it cannot have that support upon it which it ought to have: the circulation of the blood is impeded, and a wasting of the frog, and frequently of the whole foot, ensues. Hence proceed all those diseases of the feet known by the names of *founder*, *hoof-bound*, *narrow-heels*, *thrushes*, *corns*, *high soles*, &c.

"I have likewise frequently observed, from this compression of the internal parts of the foot, a swelling of the legs immediately above the hoof, attended with great pain and inflammation, with a discharge of thin, ichorous, fetid matter: from which symptoms, it is often concluded, that the horse is in a bad habit of body (or what is termed a *grease falling down*), and must therefore undergo a course of medicine, &c.

"The bad effects of this practice are still more obvious upon the external parts of the hoof. The crust toward the toe, being the only part of the hoof free from compression, enjoys a free circulation of that fluid necessary for its nourishment, and grows broader and longer; from which extraordinary length of toe, the horse stumbles in his going, and cuts his legs. The smaller particles of sand insinuate themselves between the shoe and the heels, which grind them away, and thereby produce lameness. All this is entirely owing to the great spring the heels of the horse must unavoidably have upon the heels of a shoe made in this form.

"This concave shoe in time wears thin at the toe, and, yielding to the pressure made upon it, is forced wider, and of consequence breaks



off all that part of the crust on the outside of the nails. Instances of this kind daily occur, inasmuch that there hardly remains crust sufficient to fix a shoe upon.

"It is generally thought, that the broader a shoe is, and the more it covers the sole and frog, a horse will travel the better. But, as has been formerly remarked, the broader a shoe is of this form, it must be made the more concave; and, of consequence, the contracting power upon the heels must be the greater. It is likewise to be observed, that, by using strong broad-rimmed concave shoes in the summer-season, when the weather is hot and the roads very dry and hard, if a horse is obliged to go fast, the shoes, by repeated strokes (or friction) against the ground, acquire a great degree of heat, which is communicated to the internal parts of the foot; and, together with the contraction upon the heels occasioned by the form of the shoe, must certainly cause exquisite pain. This is frequently succeeded by a violent inflammation in the internal parts of the hoof, and is the cause of that disease in the feet so fatal to the very best of our horses, commonly termed a *founder*. This is also the reason why horses, after a journey or a hard ride, are observed to shift their feet so frequently, and to lie down much.

"If we attend further to the convex surface of this shoe, and the convexity of the pavement upon which horses walk, it will then be evident that it is impossible for them to keep their feet from slipping in this form of shoe, especially upon declivities of the streets.

"It is also a common practice, especially in this place, to turn up the heels of the shoes into what are called *cramps* or *caukers*, by which means the weight of the horse is confined to a very narrow surface, viz. the inner round edge of the shoe-rim and the points or caukers of each heel, which soon wear round and blunt; besides, they for the most part are made by far too thick and long. The consequence is, that it throws the horse forward upon the toes, and is apt to make him slip and stumble. To this cause we must likewise ascribe the frequent and sudden lameness horses are subject to in the legs, by twisting the ligaments of the joints, tendons, &c.

"I do not affirm that caukers are always hurtful, and ought to be laid aside: on the contrary, I grant, that they, or some such-like contrivance, are extremely necessary, and may be used with advantage upon flat shoes where the ground is slippery; but they should be

made thinner and sharper than those commonly used, so as to sink into the ground, otherwise they will rather be hurtful than of any advantage.

"The Chinese are said to account a small foot an ornament in their women; and for that purpose, when young, their feet are confined in small shoes. This no doubt produces the desired effect; but must necessarily be very prejudicial to them in walking, and apt to render them entirely lame.

"This practice, however, very much resembles our manner of shoeing horses; for, if we looked upon it as an advantage to them to have long feet, with narrow low heels, and supposing we observed no inconvenience to attend it, or bad consequence to follow it, we could not possibly use a more effectual means to bring it about than by following the method already described.

"In shoeing a horse, therefore, we should in this, as in every other case, study to follow nature: and certainly that shoe which is made of such a form as to resemble, as near as possible, the natural tread and shape of the foot, must be preferable to any other.

"But it is extremely difficult to lay down fixed rules with respect to the proper method to be observed in treating the hoofs of different horses: it is equally difficult to lay down any certain rule for determining the precise form to be given their shoes. This will be obvious to every judicious practitioner, from the various constructions of their feet, from disease, and from other causes that may occur; so that a great deal must depend upon the discretion and judgment of the operator, in proportioning the shoe to the foot, by imitating the natural tread, to prevent the hoof from contracting a bad shape.

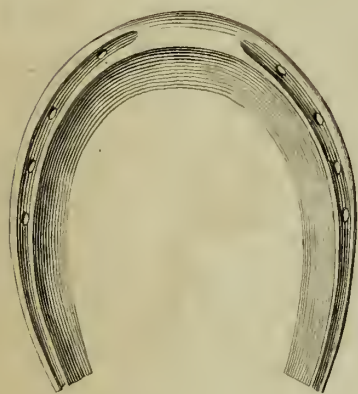
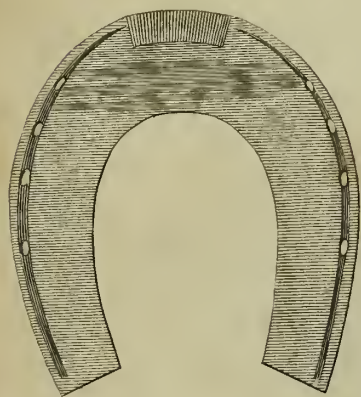
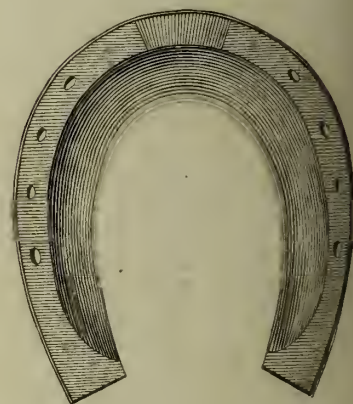
"In order, therefore, to give some general idea of what may be thought most necessary in this matter, I shall endeavour to describe that form of shoe and method of treating the hoofs of horses, which, from experience, I have found most beneficial."

The following Mr. Clark conceives to be the *proper* method. "It is to be remembered," says he, "that a horse's shoe ought by no means to rest upon the sole, otherwise it will occasion lameness; therefore it must rest entirely on the crust: and, in order that we may imitate the natural tread of the foot, the shoe must be made flat (if the height of the sole does not forbid it); it must be of an equal thickness all around the outside of the rim; and on that part of it which





## Shoes.

*M<sup>r</sup>. Clark's.**M<sup>r</sup>. St. Bel's.**M<sup>r</sup>. Taplin's.**M<sup>r</sup>. Moorcroft's.*

is to be placed immediately next the foot, a narrow rim or margin is to be formed, not exceeding the breadth of the crust upon which it is to rest, with the nail-holes placed exactly in the middle; and from this narrow rim the shoe is to be made gradually thinner towards its inner edge. (See Plate XXVI.)

"The breadth of the shoe is to be regulated by the size of the foot, and the work to which the horse is accustomed: but, in general, it should be made rather broad at the toe, and narrow towards the extremity of each heel, in order to let the frog rest with freedom upon the ground. The necessity of this has been already shewn.

"The shoe being thus formed and shaped like the foot, the surface of the crust is to be made smooth, and the shoe fixed on with eight or at most ten nails, the heads of which should be sunk into the holes, so as to be equal with the surface of the shoe. The sole, frog, and bars, as I have already observed, should never be pared, farther than taking off what is ragged from the frog, and any excrescences or inequalities from the sole. And it is very properly remarked by Mr. Osmer, 'That the shoe should be made so as to stand a little wider at the extremity of each heel than the foot itself: otherwise, as the foot grows in length, the heel of the shoe in a short time gets within the heel of the horse; which pressure often breaks the crust, and produces a temporary lameness, perhaps a corn.'

"This method of shoeing horses I have followed long before Mr. Osmer's treatise on that subject was published; and for these several years past I have endeavoured to introduce it into practice.

"But so much are farriers, grooms, &c. prejudiced in favour of the common method of shoeing and paring out the feet, that it is with difficulty they can even be prevailed upon to make a proper trial of it. They cannot be satisfied unless the frog be finely shaped, the sole pared, and the bars cut out, in order to make the heels appear wide. This practice gives them a show of wideness for the time; yet that, together with the concave form of the shoe, forwards the contraction of the heels, which, when confirmed, renders the animal lame for life.

"In this flat form of shoe, its thickest part is upon the outside of the rim, where it is most exposed to be worn; and being made gradually thinner towards its inner edge, it is therefore much lighter than the common concave shoe:

yet it will last equally as long, and with more advantage to the hoof; and as the frog or heel is allowed to rest upon the ground, the foot enjoys the same points of support as in its natural state. It must therefore be much easier for the horse in his way of going, and be a means of making him surer-footed. It is likewise evident, that, from this shoe, the hoof cannot acquire any bad form; when, at the same time, it receives every advantage that possibly could be expected from shoeing. In this respect it may very properly be said, that we make the shoe to the foot, and not the foot to the shoe; as is but too much the case in the concave shoes, where the foot very much resembles that of a cat's fixed into a walnut-shell.

"It is to be observed, that the hoofs of young horses, before they are shod, for the most part are wide and open at the heels, and that the crust is sufficiently thick and strong to admit of the nails being fixed very near the extremities of each. But, as I have formerly remarked, from the constant use of concave shoes, the crust of this part of the foot grows thinner and weaker; and when the nails are fixed too far back, especially upon the inside, the horse becomes lame: to avoid this, they are placed more towards the fore-part of the hoof. This causes the heels of the horse to have the greater spring upon the heels of the shoe, which is so very detrimental as to occasion lameness; whereas, by using this flat form of shoe, all these inconveniences are avoided; and if the hoofs of young horses, from the first time that they were shod, were continued to be constantly treated according to the method here recommended, the heels would always retain their natural strength and shape.

"By following this flat method of shoeing, and manner of treating the hoofs, several horses now under my care, that were formerly tender-footed, and frequently lame, while shod with broad concave shoes, are now quite sound, and their hoofs in as good condition as when the first shoes were put upon them.

"If farriers considered attentively the design of shoeing horses, and would take pains to make themselves acquainted with the anatomical structure of the foot, they would then be convinced, that this method of treating the hoofs, and this form of shoe, is preferable to that which is so generally practised.

"It has been alleged, that in this form of shoe, horses do not go so well as in that commonly used. This objection will easily be set aside, by attending to the following particulars.



There are but few farriers that can or will endeavour to make this sort of shoe as it ought to be. The iron, in forming it, does not so easily turn into the circular shape necessary as in the common shoe; and perhaps this is the principal reason why they object to it, especially where they work much by the piece. And as many horses that are commonly shod with concave shoes have their soles considerably higher than the crust, if the shoe is not properly formed, or if it is made too flat, it must unavoidably rest upon the sole, and occasion lameness.

"The practice of paring the sole and frog is also so prevalent, and thought so absolutely necessary, that it is indiscriminately practised, even to excess, on all kinds of feet: and while this method continues to be followed, it cannot be expected that horses can go upon hard ground (on this open shoe) with that freedom they would do if their soles and frogs were allowed to remain in their full natural strength.

"Experience teaches us, that, in very thin-soled shoes, we feel an acute pain from every sharp-pointed stone we happen to tread upon. Horses are sensible of the same thing in their feet, when their soles, &c. are pared too thin. Hence they who are prejudiced against this method, without ever reflecting upon the thin state of the sole, &c. are apt to condemn it, and draw their conclusions more from outward appearances than from any reasoning or knowledge of the structure of the parts. From a due attention likewise to the structure of a horse's foot in a natural state, it will be obvious, that paring away the sole, frog, &c. must be hurtful, and in reality is destroying that substance provided by nature for the defence of the internal parts of the foot: from such practice it must be more liable to accidents from hard bodies, such as sharp stones, nails, glass, &c. From this consideration we shall likewise find, that a narrow piece of iron, adapted to the shape and size of the foot, is the only thing necessary to protect the crust from breaking or wearing away; the sole, &c. requiring no defence if never pared.

"There is one observation I would farther make; which is, that the shoe should be made of good iron, well worked, or what smiths call *hammer-hardened*, that is, beaten all over lightly with a hammer when almost cold. The Spanish and Portuguese farriers use this practice greatly, inasmuch that many people, who have seen them at work, have reported that they form their horses' shoes without heating

them in the fire as we do. It is well known, that heating of iron till it is red softens it greatly; and when shoes thus softened are put upon horses' feet, they wear away like lead. But when the shoes are well hammered, the iron becomes more compact, firm, and hard; so that a well-hammered shoe, though made considerably lighter, yet will last as long as one that is made heavier; the advantage of which is obvious, as the horse will move his feet with more activity, and be in less danger of cutting his legs.

"The common concave shoes are very faulty in this respect: for, in fitting or shaping them to the foot, they require to be frequently heated, in order to make them bend to the unequal surface which the hoof acquires from the constant use of these shoes: they thereby become soft; and to attempt to harden them by beating or hammering when they are shaped to the foot would undo the whole. But flat shoes, by making them, when heated, a little narrower than the foot, will, by means of hammering, become wider, and acquire a degree of elasticity and firmness which it is necessary they should have, but impossible to be given them by any other means whatever; so that any farrier, from practice, will soon be able to judge, from the quality of the iron, how much a shoe, in fitting it to the circumference of the hoof, will stretch by hammering when it is almost cold: this operation, in fitting flat shoes, will be the less difficult, especially when it is considered, that as there are no inequalities on the surface of the hoof (or at least ought not to be) which require to be bended thereto, shoes of this kind only require to be made smooth and flat; hence they will press equally upon the circumference or crust of the hoof, which is the natural tread of a horse."

Mr. MOORCROFT, an ingenious veterinary practitioner in London, avows a preference to this kind of shoe, which he calls the "*seated shoe*," and which he forms in a die, in the same manner that money is struck in coining. His figure of the shoe is given in the plate already referred to, and its account of it is as follows.

"The shoe best calculated to answer the purpose," says he, "is that so strongly recommended by Mr. Osmer and Mr. Clark. The upper surface of this shoe consists of two parts: an outer part, which is a perfect plane near the rim, corresponding with the breadth of the crust, and called the *seat*; and an inner part, sloping from the seat, and distinguished by the name of the bevel.

"The seat is obviously intended to support the crust in its whole extent, the bevel to lie off the sole; and this part being more or less broad, according to the kind of work proposed to be done, will give the requisite strength to the shoe.

"As the whole of the crust bears on the seat, it is less liable to be broken than when only a small part of it rests on the shoe. In consequence, likewise, of the crust resting on the flat seat, the weight of the body has a tendency to spread the foot wider in every direction, rather than to contract it, as has been observed to happen with the common shoe: and it has in fact been found, in various instances, that a foot contracted by the common shoe, and afterwards shod with the seated one, has become wider without the horse having been taken from his usual work; and again, that a foot being of a full size and proper form when first shod with the seated shoe, has retained the same size and form without the slightest alteration, as long as the seated shoe was used.

"By the slope or bevel in the shoe, a cavity is formed between it and the sole, sufficient to admit a picker, and to prevent pressure on this part, without the sole itself being hollowed, and consequently weakened.

"For if it be one of the functions of the horny sole to defend the sensible sole, of which, from its situation and nature, no one can doubt, it must be evident, that the more perfect it is left, the stronger it must necessarily be, and of course the more competent to perform its office."

The author goes on to observe, that "though he is not sanguine enough to suppose, that this shoe will prevent lameness in every case; he is nevertheless warranted by experience to assert, that it will diminish its frequency."

Mr. Coleman, however, states some important objections to this form of the shoe.

"If," says he, "it should be found, where the shoe is applied, that the sole very frequently receives pressure, then we shall demonstrate that the practice is incompatible with the principle. If it be good practice for the sole to receive pressure, then the principle must be erroneous that attempts to make the shoe rest *entirely on the crust*: and if the principle be well founded for the *crust only* to support the shoe, then, if the sole be in contact with the shoe, the practice must be imperfect. Except a model be taken of every horse's foot, it is impossible for the resting-place of the shoe *precisely to fit the*

crust; for the crust not only varies exceedingly in different horses, but in the same hoof at different parts. The flat surface, therefore, that is only broad enough for the toe, is frequently too broad for the quarters and heels. And in all the shoes I have ever seen of this description, the flat part of the shoe is made of the same breadth at the quarters as at the toe (see Plate XXVI.) It is farther to be observed, that this surface very generally exceeds the crust at every part. In the same proportion as the seat of the shoe exceeds the breadth of crust, exactly so much of a flat surface is opposed to an equal quantity of sole. The principle of this shoe is therefore defeated by the practice; for, instead of the seat resting on the crust, it projects over the edge of the sole. It is therefore a fact, that while great pains have been taken to make a flat seat on the shoe, in order to support the crust only, and the web concave, in order to remove pressure from every part of the sole; that the seat has, nevertheless, *very rarely fitted the crust*: and consequently the soles of all flat feet, at their connection with the crust, must receive more or less of pressure from the seat of the shoe. Where the sole is concave, this shoe will only rest on the crust: but a shoe that is *flat on its whole internal surface* would answer the same purpose; for the concave part of the sole opposite to the concavity of the web of the shoe would receive no pressure even from a shoe wholly flat."

After having stated these facts relative to a form of shoe, nevertheless (we will venture to say) superior to that of some later veterinarians, the ingenious professor proceeds to recommend a shoe which has been found free from these and other objections, and which indeed bids fair to supersede the use of every other kind. Before we introduce this to the reader's notice, however, it will be expected we should at least mention in a cursory way the shoes proposed by Mr. St. Bel, and Mr. Taplin; both of whom have taken considerable pains to attract the notice of the public to their peculiar inventions. To say the truth, however, the changes they have introduced are rather novelties than improvements; and, as such, we content ourselves with little more than exhibiting the delineations attributed to them in the plate. Mr. St. Bel indeed is chargeable with an important error, no less than that of promoting the arched form of the horse's foot, and thus raising the frog out of the way of pressure; a practice (as will presently be shewn) highly injurious to the animal. Were we disposed indeed to pre-



sent the reader with an analysis of Mr. Taplin's system of shoeing, so peculiarly redundant is that gentleman's language, so unconnected his reasoning, and so affected his phraseology, that the attempt would be hopeless. The following selections from Mr. St. Bel, however, have at least the merit of being intelligible, and are not wholly destitute of useful information.

"The feet of horses," says he, "at their inferior surface, are naturally concave, flat, or convex. Suppose, for instance, a foot well formed and properly concave; a second, flat; and a third, convex. The inconveniences attending the convex and flat foot will be considerably increased by shoes with a similar surface, because the iron of the shoe being harder than the horn of the hoof presents a smoother and more polished surface, and, consequently, more liable to slip. On this account therefore it is, that *I have proposed the concave shoe*, that is to say, *concave in its lower surface, because it represents the natural shape of the foot*, and because it fulfils, in every respect, the views and intentions of nature; and I am therefore convinced that it *ought to be applied to all good feet*.

"As some cases are to be excepted from every general rule, so here the use of the concave shoe is to be excepted from the case of a flat foot, and especially of a convex one: but it does not follow from this exception, that the use of this shoe may not become general in time; because it must be remembered, that feet only become flat and convex through *bad shoeing*, or by some accident, as when a horse is foundered; and that no horses, not even those bred in marshy and low lands, are foaled with this imperfection. Nor can we be justified in accusing nature with having neglected to provide sufficiently for the foundations of this admirable machine, when at the same time the same machine affords us so many convincing proofs both of her wisdom and her providence.

"But it is not in the concave form only that the shoe here proposed must differ from the shoe in use among farriers, at this day; there are certain proportions also to be observed in its different parts. Its breadth should be considerably less than the breadth of the common shoe: it is totally unnecessary to cover any part of the sole, especially when care is taken to preserve its natural hardness. The breadth of the shoe at the heels should be one half of its breadth at the toe. Its thickness should decrease gradually from the toe, so as to be

reduced one half at the extremity of the heels. As to the distribution of the stamp holes, every farrier knows that in shoes for the fore feet they should be at the toe, and quarters, because the wall, or crust, of the fore feet is stronger at the toe than at the heels. The reverse of this is to be observed in the hind shoes, because the heels and quarters of the hind feet are commonly stronger than the toe. It is impossible to lay down any general rule for disposing of these holes in bad feet; it must be the business of the farrier to distribute them in such a manner, as to be able to fix the nails in those parts of the crust where the horn is sound and firm. Farriers generally multiply these stamp-holes too much; which brings the nails too close together, occasions the horn to break in splinters, and at length destroys the crust.

"I would recommend the following number for good feet, viz. for race-horses, six; i. e. three on each side: for saddle horses, seven; four on the outside and three within, the quarter on this side being weaker than on the other: the same number for coach horses of the middling size; for large coach horses, four on each side; and for cart horses, five on the out and four on the inside.

"It is also of principal importance to determine the *weight of the shoe*; for it is matter of astonishment to see some horses with shoes weighing each five pounds, making together a burthen of twenty pounds of iron attached to their four feet. It is obvious to common sense, that such an additional weight fixed to the extremity of the leg must be productive of some inconvenience or other; and in fact the muscles are thereby compelled to greater exertion, the ligaments are stretched, and the articulations continually fatigued: and besides all these evil consequences, the shoe by its weight forces out the nails, and so entirely spoils the texture of the wall, or crust, that it becomes often extremely difficult to fix the shoe to the hoof. Why then, we may ask, do not the practitioners of the present day, who are daily witnesses of these facts, and are indeed the principal authors of them, apply themselves to the correction of their own errors? The answer, I fear, is obvious; because he who is uneducated, and destitute of sound principles in his art, cannot turn to real profit the experience he has acquired, nor abandon the path of prejudice and custom in which he has so long journeyed; but satisfies himself with continuing to imitate and repeat whatever he has seen done by others.

"The weight which we propose for shoes of different kinds is nearly as follows: lb. oz.

- |   |   |   |       |             |
|---|---|---|-------|-------------|
| 1. For the strongest sort of cart horses, | - | - | 2     | 12          |
| 2. For the smaller horses of this kind,   | - | - | 1     | 12          |
| 3. For the largest coach horses,          | - | - | 1     | 12          |
| 4. For the smaller ditto,                 | - | - | 1     | 4           |
| 5. For saddle horses of any height        |   |   |       |             |
|   |   |   | 1 lb. | 2 oz. to 10 |
| 6. for race horses,                       | - | - | 5 oz. | to 4        |

By reducing the superfluous breadth of these shoes, their thickness may be increased without making any addition to their weight."

Mr. Coleman expresses his sentiments of the shoe proposed by Mr. St. Bel, in the following words: "Mr. St. Bel," says he, "employed a shoe with a flat upper surface; but, from not attending to the very important operation of removing the sole under the heels of the shoe, to every kind of hoof, it frequently failed of success."

"The best form for the external surface of the shoe is a *regular concavity*; that is, the *common shoe reversed*. This shoe leaves the hoof of the same figure when shod, as before its application. And it is evident, that a concavity has more points of contact with pavement and other convex bodies than a flat or convex surface, and that the horse is consequently more secure on his legs. A shoe that is flat externally, may preserve the hoof equally well in health; but this form is not so well calculated to prevent the horse from slipping as a concavity."

These observations, as applying to the system of Mr. St. Bel, we have taken out of their natural order. In the preceding pages of his work, Mr. Coleman makes the following remarks on the principles and practice of shoeing horses.

"There are two circumstances necessary to be attended to," says he, "in shoeing, viz. to cut the hoof and apply the shoe. Before the hoof is protected by iron, some parts require to be removed, and others preserved. This is even of more importance than the form of the shoe. But many have attended chiefly to the shoe, and not to its application, or to the hoof; and this error has produced more mischief, and more enemies to the Veterinary College, than all the prejudices and calumnies of grooms and farriers."

"The first thing to be attended to is to take away a portion of the sole between the whole length of the bars and crust, with a drawing-knife; for the heels of the sole cannot receive

pressure without corns. To avoid this, the sole should be made concave, so as not to be in contact with the shoe. If there be any one part of the practice of shoeing more important than the rest, it is this removal of the sole, between the bars and crust. When this is done, the horse will always be free from corns, whatever may be the form of the shoe."

"Besides this, the heels of the shoe should be made to rest on the junction of the bars with the crust: whereas, if the bars are removed, the shoe is supported by the crust only, and not by the solid broad basis of crust and bars united."

"It is necessary that the sole should be cut before any other part of the hoof be removed. If the heels have been *first* lowered by the butters, then possibly there may not be sufficient sole left to enable a drawing knife to be applied, without reaching the sensible sole; whereas, by cutting the sole in the first instance, we can determine on the propriety of lowering the heels and shortening the toe. The sole can then descend, without the motion being obstructed by the shoe; and any foreign bodies that may have got into this cavity are always forced out when the sole descends, without producing any mischief."

"When the shoe is applied, the cavity between the sole and shoe should be sufficiently large, at every part, to admit a large horse picker, and particularly between the bars and crust. If the sole is naturally concave, a shoe with a flat surface applied to the crust will not touch any part of the sole; and if the sole be flat, or even convex in the middle, or towards the toe, the quarters and heels of the sole will generally admit of being made concave with a drawing knife, so as not to receive any pressure from a flat shoe."

"If a shoe with a flat upper surface does not leave ample space for a picker, between the sole and shoe, then it is requisite to make either the sole or the shoe concave. When the sole appears in flakes, and thick in substance, it will be better to make the whole of the sole concave by a drawing knife; and this operation should always be performed before the toe is shortened or the heels lowered. When we have made the sole hollow, then a shoe with a flat surface will rest only on the crust: but if the sole be flat, or convex, and thin towards the toe and middle of the hoof, so as to prevent the possibility of removing the sole at these parts to form a concavity, then it is necessary to employ a shoe *sufficiently concave to avoid pressure*, and to admit a picker. In this case, however, the sole



at the heels and quarters, even in convex feet, will generally allow of removal with a drawing knife, and then the quarters and heels of the shoe may be flat. It therefore follows, that, where the sole can be made concave, a shoe with a flat surface may with safety be applied; but where parts of the sole, from disease or bad shoeing, become *flat*, a shoe with a concave surface is required. As the hoof is always growing, and as the shoe preserves it from friction, the toe of the crust requires to be cut once in about twenty-eight days. The more horn we can remove from this part, the sooner it will be proper to apply a shoe thin at the heels, without mischief to the muscles and tendons, and the horse will be less liable to trip.

"The bars and frog should never be removed. What is ragged and detached had better be cut off with a knife by the groom than left to the farrier, who will perhaps remove some of the sound parts. Where the frog is not large and projecting, the heels may be lowered by a rasp or the butteris, for *in every case we are to endeavour* to bring the frog in contact with the ground. The frog must have pressure or be diseased (see FROG). Nevertheless, when the frog has been disused for a considerable period, and become soft, it must be accustomed to pressure by degrees. If the quarters are high, and much exceed the convexity of the frog, we should gradually lower the heels, and endeavour to bring the frog and heels of the shoe on the same parallel line. Where work is required of the horse, while the frog is soft and diseased, it may be gradually used to pressure, by lowering the hoof about the tenth of an inch, every time of shoeing, until the frog be hard, and equally prominent with the heels; or if the horse is not wanted, great advantage would be derived from his standing without shoes on a hard pavement.

"But as the feet of horses are so variously deformed by bad management, it will be requisite, in shoeing, to attend to each particular kind of hoof. *If any form of shoe be indiscriminately applied* for all kinds of feet, *it must frequently fail of success*; but by proper attention to the different hoofs, we can generally improve the whole foot, so as to employ the shoes recommended at the Veterinary College.

"After the hoof has been properly prepared, then it is requisite to apply a shoe, and to vary its length, breadth, and thickness at the heel, surfaces, &c. according to the hoof. If the heels of the fore feet are two inches and a half or more in depth, the frog sound and pro-

minent, and the ground dry, then only the toe of the hoof requires to be shortened, and afterwards protected by a short shoe (see Plate XXVII. fig. 4.) made of the usual thickness at the toe, but gradually thinner towards the heel. For a common sized saddle-horse, it may be about three-eighths of an inch thick at the toe, and one-eighth at the heel. The intention is, to bring the frog completely into contact with the ground, to expand the heels, prevent corns, thrushes, and canker. If applied in May or June when the ground is dry, it may be continued all the summer; and in warm climates, where this is the case, no other protection for the hoof is requisite."

The professor here observes, that so long as the wear of the hoof is not greater than the supply afforded by nature from the coronet, so long may the short shoes be worn; but in wet weather this is not the case: "I have known," says he, "some light horses, to wear them the whole year; but such instances are not common. Nevertheless, the short shoe can be employed on most horses with advantage in summer, when the heels are from two and a half to three inches in depth, and the frog equally prominent: but, unless the hoof has been properly preserved, the heels and frog are generally too low for the short shoe. The toe of the horse requires to be shortened as much as possible; but if the frog touches the ground, no part of the heels should be cut; and, by pursuing this practice, the heels will frequently grow sufficiently high to receive the short shoe."

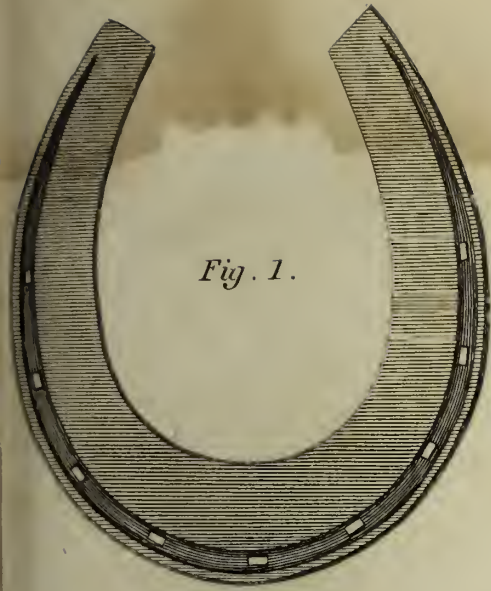
After speaking of the application of the short shoe to running horses, Mr. Coleman says, "during the wet months, we protect the whole crust by a long shoe; and if the heels of the hoof are low, we employ the same shoe in summer.

"In winter, when the heels are too high, it is better to lower them moderately with a rasp, than to wear them down with a short shoe, as the wet may cause more horn to be destroyed than is necessary to be removed; but it cannot be too often repeated, that *the sole between the bars and crust* should be taken out *before the heels are cut*. If the heels are first removed, then possibly the horn left will be insufficient to afford a proper degree of concavity between the bars and crust." *Where very high-heeled shoes have been worn*, the frog would be liable to injury, as well as the muscles and tendons that bend the leg, from the sudden application of a shoe made thin at the heels. "Indeed, whether the shoe or hoof be the cause that elevates the frog, the same attention is required to bring it *gradually* in contact with the

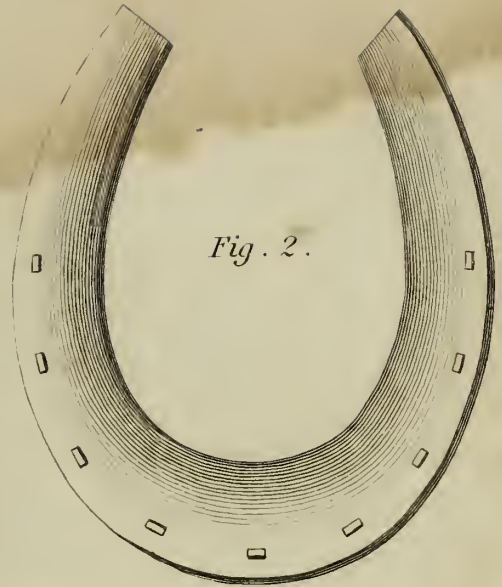
Shoes.

*Mr. Coleman's.*

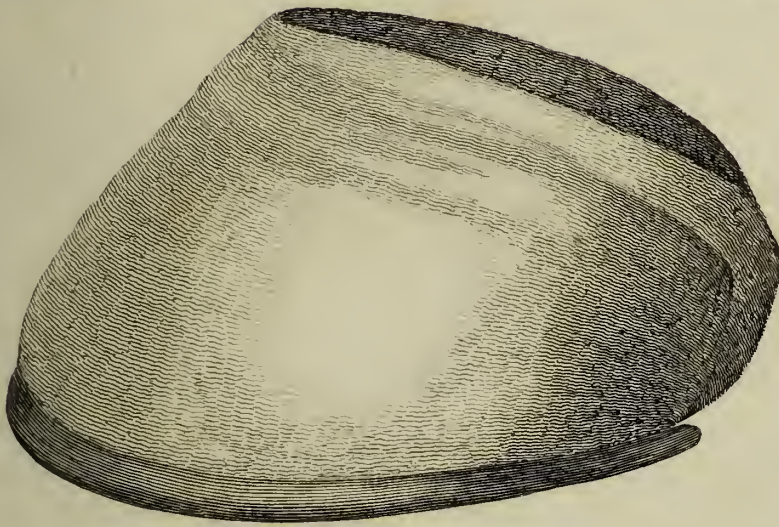
*Fig. 1.*



*Fig. 2.*

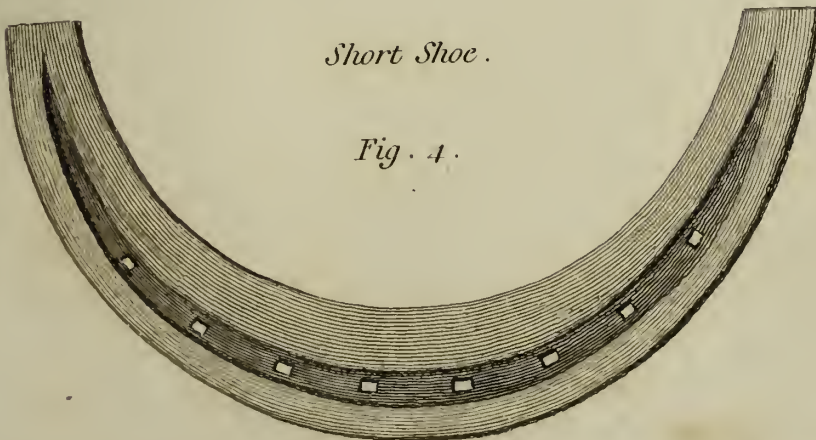


*Fig. 3.*



*Short Shoe.*

*Fig. 4.*







ground. We therefore *thin the heels of the shoe by degrees*, that the frog may become accustomed to hard pressure. The thickness of the last shoe at the heel will always furnish a proper criterion for that to be next applied. If only a small portion of the hoof can be taken from the toe, the heel of the new shoe should be about one-tenth of an inch thinner than the shoe removed; and the growth of the crust will generally be equal to this diminution of iron. By reducing the heels of the shoe in the same proportion as the hoof grows, a thin-heeled shoe may, in a few months, be employed; and yet the horn being preserved at the heels, and cut at the toe, every time of shoeing, the heels (shoe and hoof together) will be as high, and frequently higher, than when the former thick-heeled shoes were employed. The crust that descends at the heels we allow to remain; but subtract an equal quantity of iron from the heels of the shoe, and as much horn as possible from the toe of the hoof. This system should be continued, till the heels of the shoe are about one-third the thickness of the toe. In proportion as the crust from the coronet to the toe increases, and the heels decrease in depth, the back sinews and muscles will be put on the stretch. And the converse of this must be equally true, that as the heels are high, and the toe short, the muscles and sinews are relieved. It therefore follows, that every atom of horn or iron taken from the toe of the crust, or shoe, tends to relax the parts behind, and that the removal of horn or iron from the heels produces the opposite effect. If these simple facts are kept in view, there can be no difficulty in ascertaining the quantity of iron that may be removed with safety from the heels of any shoe, without danger of mischief to the muscles and tendons."

Mr. Coleman next proceeds to consider some particular cases of shoeing: but for these minutiae we have not room in this place. No person desirous of full information on the subject can fail of finding it in the very ingenious work from which we have drawn the preceding extracts. We think it, however, very material to introduce to the reader the following account of a method of "*shoeing horses that cut*," by Mr. Moorcroft.

"To prevent a horse," says he, "from striking the foot or shoe against the opposite leg, by which it is often bruised or wounded, is an important point; inasmuch as this accident occurs very frequently, and as it not only blemishes and disfigures the leg, but also endangers the safety of the rider.

"The parts struck in the hind leg, are the

inside of the fetlock joint, and the coronet; in the fore leg, the inside of the fetlock joint, and immediately under the knee; which latter is called the *speedy-cut*, from its happening only when a horse goes fast.

"Young horses, when first backed, generally cut their fore legs, although naturally they may be good goers. This arises from their placing the foot on the ground too much under the middle of the breast, in order the better to support the burthen to which they are unaccustomed; but by degrees they acquire the method of balancing the weight, with the foot in the same direction it would naturally have were they without it. It may therefore be laid down as a general rule, with such horses, that till they regain their natural method of going, the edge of the inner quarter of the shoe should follow exactly the outline of the crust, but should not be set within the crust, nor should the crust itself be reduced in thickness; as both these practices tend to weaken the inner quarter, and to deform the hoof. And here it must be observed, that the outer edge of the shoe should, in all cases of sound feet, follow exactly the outer edge of the crust, except just at the heel, where it should project a little beyond the line of the hoof.

"Horses with narrow chests, having their legs placed near together, are apt to cut when they begin to tire; and with these the practice just mentioned should always be employed. Horses that turn their toes much outwards are of all others most subject to cut." In reply to the assertions of some, that this accident also happens to such horses as turn the toes much inwards, the author denies having met with a single instance of this kind. "In horses of the first description," says he, "it has been long observed, that the inner quarters of the hoof were lower than the outer, and that the fetlock joints were nearer each other, than in horses whose feet pointed straight forwards. These two facts probably led to a conclusion, that if the inner quarters were raised to a level with the outer, and so much the more as they were made proportionably higher, that the fetlock joints would be thrown farther apart, so as to admit of the foot passing by the supporting leg without striking the joint. Accordingly, for the two last centuries at least, it has been usual to make the inner quarter of the shoe higher than the outer; and not only has this been the general practice, but it has been regularly recommended by almost every writer from that time to the present. And notwithstanding this method has very frequently failed



of success, yet repeated disappointment appears never to have led to the circumstance of questioning the truth of the principle. Nay, indeed, the reliance placed upon it has been so strong, probably from the simplicity of the reasoning on which it was founded, that in the cases where it most particularly disappointed expectation, its failure was generally attributed to the practice not being carried sufficiently far; and accordingly the shoe has been still more raised on the inner quarter, and the edges of the crust and shoe have been filed away. When with these expedients likewise failed, the last resource has been, a circular piece of leather placed round the joint to receive the blow of the foot."

About four years since, Mr. Moorcroft applied a shoe, with the outer quarter thick and the inner one thin, in a case which had baffled many attempts on the old plan. On the first trial the horse ceased to cut, nor has he ever done it since; which can only be attributed to his having constantly worn the same kind of shoe. Other bad cases, which occurred occasionally since that period, were treated in the same way, and with the same success, although for a long time the author was completely at a loss how to explain them. "If," says he, "the action of *cutting* principally depends on the faulty position of the fetlock joints, and of the feet with respect to each other, and it seems generally agreed that such is the fact, it should seem, that a means which, by raising the outer quarters, must throw the fetlock joints still nearer to each other, would necessarily increase the defect in question; but as the reverse of this actually takes place, it might induce a suspicion, that there exists some other cause of cutting, which has been hitherto overlooked."

Mr. Moorcroft declines a minute examination of this point, and therefore confines himself to that part only of the subject which is absolutely necessary to be understood. "For horses," he says, "which cut their hind legs, the shoe, at the outer heel, should be from half an inch to an inch in thickness, according to the kind of horse, and to the degree in which he may cut. The web of the shoe should gradually become thinner till it reaches the toe, which should be of the ordinary thickness, and from which it should slope off, and end like a tip in the middle of the inner quarter. [For horses which cut only in a slight degree, a shoe of the same thickness throughout, but reaching on the inner quarter only as far as the middle of the foot, will in most instances be found sufficient]. This shoe, in point of effect, would be equally proper for the fore feet, were it not that in

such horses as are used for the saddle, the fore feet being more charged with weight than the hind feet, are more particularly subject to be injured, and a horse thus shod on the fore feet might go unsafe: therefore, it is expedient to let the inner quarter of the shoe be thin, and reach to the heel; but the outer edge should be bevelled off, so as to slope inwards. The same kind of shoe is equally well calculated to prevent the *speedy-cut*; observing to bevel off, still more strongly, the part which strikes, and not to put in any nails thereabouts. And here it may be proper to remark, that in sound feet, the heel of the shoe should reach as far on the heel of the hoof as to admit of the angle formed by the crust and the bar resting fully upon it; but it should not be carried quite as far as the end of the heel of the hoof."

With a view to ascertain what would happen to a horse shod with different kinds of shoes, the following trials were made by Mr. Moorcroft.

*Experiment I.*—"A horse with a narrow chest, who had never cut, and having parallel shoes on his fore feet, was trotted at about the rate of eight miles an hour in a straight line, over ground sufficiently soft to retain slightly the impressions of the shoes, but not to admit the feet to sink into it.

"Two parallel lines were drawn along the track, including between them the prints of the shoes. By these it was found, that there was regularly a distance of nine inches and a half between the outer edge of the near fore shoe and that of the off fore shoe."

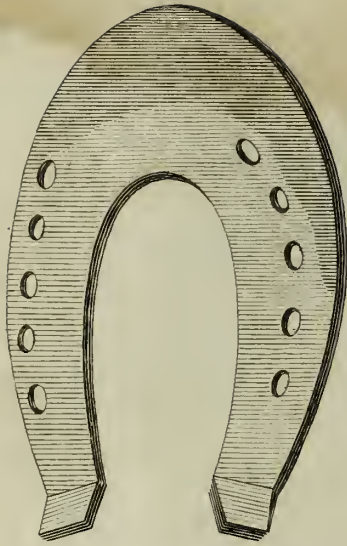
*Experiment II.*—"Shoes thick in their inner quarter, and like a tip, reaching only half-way on the outer quarter, were then used; and it appeared, that the distance between the outer edges of the prints of the shoes, taken as before, was regularly reduced to eight inches and a half."

*Experiment III.*—"The same shoes were afterwards placed on the opposite feet, so that the thick heel was on the outer quarter; and the result, under circumstances exactly the same as in the foregoing experiments, was, that the distance between the outer edges of the prints of the shoes was regularly increased to eleven inches.

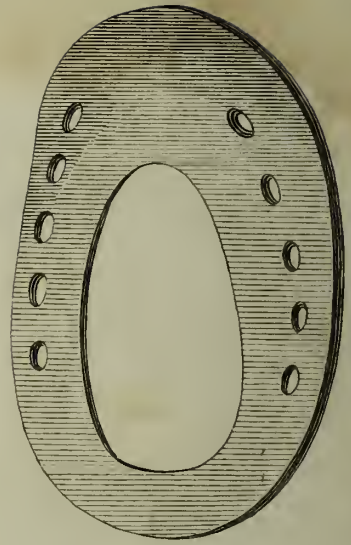
"To account for these results, it is necessary to attend closely to the different effects produced by the weight of the fore part of the body acting upon the two fore feet, when raised on the inner or outer quarters, during the opposite states of rest and action. And first, with regard to shoes raised on the inner quarter: whilst a horse so shod is standing still, the



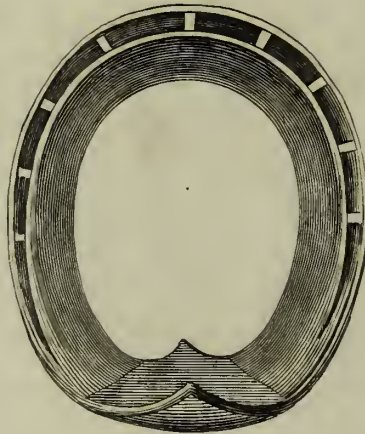




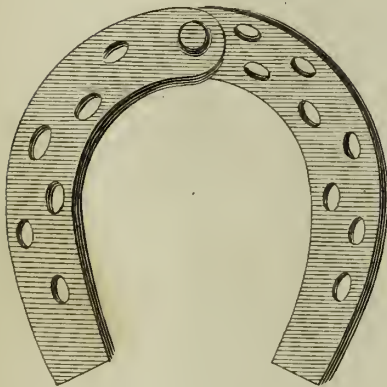
*Mule's - Shoes.*



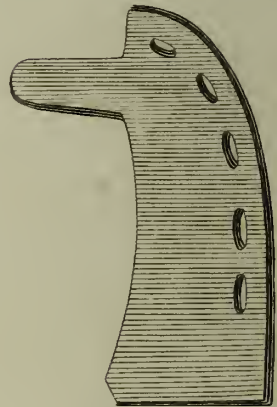
*Bar-Shoe.*



*Hinge-Shoe.*



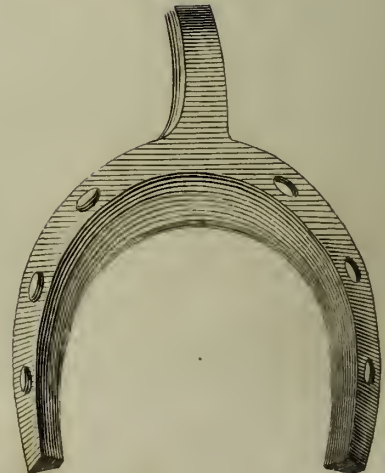
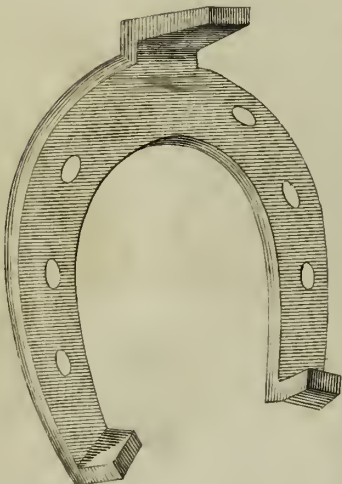
*Ox-Shoe.*



*Frost-Pin.*



*Patten-Shoes.*



fetlock joints are certainly thrown farther apart than when any other kind of shoe is used. Hence, it was concluded, that the limb which supported the body would have its fetlock joint thrown so much outwards, as to keep it completely out of the way of the foot in motion. But it appears, that the impressions made on the ground by such shoes are an inch nearer together than those made by parallel shoes, and two inches nearer together than those made by shoes raised on the outer quarter. And this may be thus explained: when the horse is at rest, the weight is supported equally by the two fore feet; but the instant one foot quits the ground, the weight is suddenly transferred to the other; and by the outer quarter being lower than the opposite one, the fore part of the horse has a tendency to fall over to the outside. To prevent this, the moving foot is suddenly brought close to the fetlock of the supporting foot, in order to relieve it by catching the weight, and the foot itself is placed on the ground, too much under the middle of the breast. The same circumstance occurs to both feet in their turn. And the horse, being thus in constant danger of falling to one side or to the other, is constrained to bring his feet near together to preserve his balance, and in doing this strikes the foot against the opposite fetlock.

"It frequently happens, that the more the toes are turned outwards the nearer the fetlock joints are brought together, and the more the horse is disposed to cut. However, this is true only to a certain extent; for if this faulty position of the lower part of the leg be carried artificially beyond a given point, instead of producing an increased degree of cutting, in most instances it remedies the defect altogether. The reason of this is just the reverse of what takes place when the inner quarter is raised; that is to say, when the weight of the fore part of the body rests only upon one leg, it bears too much upon the inner quarter, from its being lower than the outer quarter; and thus the horse has a tendency to fall over to the inside of the supporting leg.

"To prevent this, the moving foot is thrown farther from the supporting leg, in order to maintain the balance; and thus the foot misses the fetlock joint."

Some of our veterinary readers may be inclined to reason differently on the facts stated by Mr. Moorcroft, especially those who have read Mr. Coleman's remarks on the distorted hoof and its remedy; but it would extend this article to an unreasonable length to enter into that subject.

Whenever the roads are covered with ice, it becomes necessary to have the heels of a horse's shoes turned up, and frequently sharpened, in order to prevent him from slipping and falling: but this cannot be done without the frequent moving of the shoes, which breaks and destroys the crust of the hoof where the nails enter. To prevent this, it is recommended to those who are willing to be at the expence, to have steel points screwed into the heels or quarters of each shoe, which might be taken out and put in occasionally.

The method of doing this properly, as directed by Mr. Clark, is first to have the shoes fitted to the shape of the hoof, then to make a small round hole in the extremity of each heel, or in the quarters, about three-eighths of an inch in diameter, or more, in proportion to the breadth and size of the shoe; in each of these holes a screw is to be made: the steel points are likewise to have a screw on them, exactly fitted to that in the shoes. Care must be taken that the screw on the points is no longer, when they are screwed into the shoe, than the thickness of the latter. The steel points are to be made sharp; they may either be made square, triangular, or chisel pointed, as may be most agreeable; the height of the point above the shoe should not exceed a quarter of an inch for a saddle horse; they may be made higher for a draught horse. The key or handle that is necessary to screw them in and out occasionally is made in the shape of the capital letter T, and of a sufficient size and strength. At the bottom of the handle, a socket or cavity must be made, properly adapted to the shape of the steel point, and so deep as to receive the whole head of the point that is above the shoe. In order to prevent the screw from breaking at the neck, it will be necessary to make it of a gradual taper; the same is likewise to be observed of the female screw that receives it, that is, the hole must be wider on the upper part of the shoe than the under part: the sharp points may be tempered or hardened, in order to prevent them from growing too soon blunt; but when they become blunt, they may be sharpened as at first. These points should be unscrewed when the horse is put into the stable, as the stones will do them more injury in a few minutes than a day's riding on ice. A draught horse should have one on the point of each shoe, as that gives him a firmer footing in drawing on ice; but for a saddle horse, when points are put there, they are apt to make him trip and stumble. See fig. 10. in 2d Plate XXVII.

When the shoes are provided with these



points, a horse will travel on ice with the greatest security and steadiness, much more so than on causeway or turnpike roads, as the weight of the horse presses them into the ice at every step he takes.

Besides the common shoe for horses that have sound feet, there are also others of various shapes, determined by the necessity of the case, that is to say, by the different derangements and diseases to which the horse's foot is liable. Such, for instance, are, what farriers call the covered, flat, or convex shoe; the patten-shoe (see PATTEN-SHOE); the shoe for all feet, simple, double, and hinged; the shoe without nails, the half-moon shoe, the Turkish shoe, the slipper shoe, &c. Mr. St. Bel has delineated some of these in his Lectures on Farriery. See second Plate XXVII.

It now only remains for us to conclude the present article with some few remarks on the shoeing of other animals employed in the service of man, and these we owe to the writer last quoted.

"The *mule*," says he, "being an animal uncommon in this country, the ass of no great value, and the ox not generally employed in labour, we shall dwell but little on the shoeing of these animals. The shoe for the fore feet of the mule is very similar to that which the farriers call the *bar shoe*. It is very wide and large, especially at the toe, where it sometimes projects four inches and upwards beyond the hoof. This excess is given it with a view to enlarge the basis of the foot, which is in general exceedingly narrow in this animal. The shoe for the hind feet is open at the heels, like the horse's shoe; but it is lengthened at the toe, like the preceding one. The former is called in French *planche*, and the latter *florentine*.

"The foot of the *ass* having the same shape as that of the mule, requires the same kind of shoe, with this only difference, that the shoe for the fore foot is not closed at the heels, and that its edges do not project so much beyond the hoof. The same form of shoe is used for the hind feet of this animal.

"The *ox's* shoe consists of a flat plate of iron, with five or six stamp-holes on the outward edge to receive the nails; at the toe is a projection of four or five inches, which, passing in the cleft of the foot, is bent over the hoof, so as to keep the shoe in its proper place. In many parts of France, where the ox is used for draft, it is sometimes necessary to employ eight shoes, one under each nail; or four, one under each external nail; and sometimes only two, one under the external nail of each fore foot."

We are obliged to be content with this short account concerning the shoeing of these animals; though it is obvious, that the practice is conducted in the rudest manner, and without any reference to principles. We should of all things condemn as a cruel and ignorant practice the extension of the toe of the shoe of the mule so far beyond the toe of the hoof.

**SHORT-JOINTED.** A horse is said to be short-jointed that has a short pastern. When this joint, or the pastern, is too short, the horse is subject to have his fore-legs from the knee to the coronet all in a straight line. Short-jointed horses do not manage so well as the long-jointed; but, out of the manage, the short-jointed are the best.

**SHOULDER**, that joint in a horse which connects the blade bone with the extremity of the fore thigh. See the article BONES, and Plate V. The shoulder-blades have four pair of muscles suited to their several motions. The first are the *cucullares*, so called from their resembling a monk's hood or cowl. These, being seated between the shoulders, cover the top of the withers; and, when they happen to be fleshy, cause that thickness we observe on those parts, more on some horses than others. They arise from the hind part of the head, from slender beginnings, and grow broader as they descend downwards to their insertion in the spine of the scapula and shoulder-bones. The next pair are the *levatores* which cover the uppermost rib. These arise from some of the transverse processes of the neck, terminate in the fore-part of the shoulder-blades, and draw them upwards and forwards. The third pair lie under the pectoral muscles, springing from the four uppermost ribs, are inserted into the anchor-process of the blade-bone. These move the shoulder-blades forwards towards the chest. The last pair lie under the broadest part of the cucullares above described, rising from the lowermost spines of the neck, and uppermost of the breast, and are inserted into the basis or bottom of the shoulder-blades, by very strong tendons, which fix them to the ribs. These draw the shoulder-blades somewhat upwards and backwards. Many of the lamenesses in the shoulders of horses proceed from strains or other injuries of these muscles.

The shoulder, viz. that part which reaches from the point of the blade to the elbow, has nine muscles, which ought also to be well considered in all the lamenesses of the shoulder; for the articulation of the shoulder, and the disposition of the muscles in horses, is such, that the shoulder can hardly be dislocated, as in

men : and if this should happen at any time, it could scarcely ever be remedied ; for though a horse will sometimes appear with a very violent strain, as if his shoulder-joint was out of place ; yet this is only owing to the sudden swelling and relaxation of the muscles and ligaments, which distort the part, and render it incapable of its true motions ; and therefore the mechanism of the shoulder, and shoulder-blades, ought to be well understood by those who practise veterinary surgery.

The first of the shoulder-muscles rises from that which is situated nearly as the collar-bone in the human subject, and, passing over part of the blade, is inserted into the shoulder-bone about its middle. This muscle helps to lift the shoulder upwards. The second rises from the spine or ridge of the shoulder-blade, and is inserted into the neck of the shoulder-bone, by a strong and broad tendon. This also helps to raise up the shoulder, and both give their assistance in its circular motions, so far as it is capable. The two *depressors* pull the shoulder downwards. The first has its origin from the *os sacrum*, near the rump, from the haunch-bone and vertebræ of the back, and, with its fellow on the other side, spreads over a great part of the back ; from whence it is called *latissimus dorsi*, or the broadest muscle of the back. The other rises from the lower side of the shoulder-blade, and is inserted into the upper and inner side of the shoulder-bone. The two pair that bring the shoulder forward, are the pectoral muscles, and those which Snape and others improperly called the *coracoid* ; for a horse, nor scarcely any other quadruped, has that process which in men is called *coracoid*. It rises from the anterior part of the blade-bone, near its brim, and is inserted into the middle of the shoulder-bone. The pectoral muscles are so called, because they cover most of the breast, and are inserted into each shoulder-bone a little below their round heads. The remaining three muscles move the shoulder backwards. The first has its origin from under the spine of the blade-bone, and is inserted into one of the ligaments of the shoulder-bone. The second is placed between the shoulder-blade and ribs, and is inserted into another ligament of the shoulder-bone. The last rises from the lower angle of the blade-bone, and is inserted into the neck of the shoulder-bone.

The motions of the shoulders in horses, and in most quadrupeds, are more limited than in men, their chief action being forwards and backwards, wherein they have a capacity of being raised higher or lower, according to their

necessity. A horse's shoulders also move a little outwards and inwards, which is necessary to their going on uneven roads. They have likewise some capacity of a circular rotation, which, however, is but small ; and when a horse performs any thing by such motions, it is, for the most part, more owing to art than to nature, viz. when his shoulders have been well supplied by a good horseman, that is, when the muscles and ligaments have been stretched, and rendered pliable, by a skilful management of the rider in long-continued exercise : and therefore, when a horse is brought to perform any of those easy airs, which we observe in the manege, especially when they go through their exercises in narrow circles ; though the shoulders have a great share in these exercises, and some horses are much more suited to them, by the symmetry of their shoulders, than others, yet all the joints of the neck, back, and loins, must also contribute to it more or less. The shoulder-blades of a horse lie like two shields, one on each side, which confine the actions of his shoulders very much to straight motions ; whereas, in men, they are placed behind, so that they leave the actions of the shoulders and arms without that restraint. In a horse, the rib which answers in point of situation to the collar-bone is fixed, and in a great measure immoveable ; but, in man, the latter is articulated with his shoulder-blade, and participates more or less in all its motions ; and hence it is that a man is enabled to turn his arms in several different directions, and to perform motions for which quadrupeds have no ability.

*The faults and defects of a horse's shoulders* are thus described by Gibbon. A horse's shoulders, he says, should be not too much loaded ; for a horse that has heavy shoulders can never move well. On the other hand, one that has very thin shoulders, with a narrow chest or bosom, though he may move briskly while he keeps sound, yet such horses are generally weak ; and the most easily lamed in their shoulders of all others. A narrow-chested horse turns his elbows inwards towards his bricket, and his toes outwards ; crosses his legs in travelling, and sometimes cuts himself ; and this sort of horses, by their unsteadiness, are as apt to trip and stumble as the horses that are thick-shouldered, though they do not so easily come down ; in the main, they are of less value ; for if they happen to get lame they are fit for nothing, being weak and slender ; whereas thick-shouldered horses are generally strong ; and if any accident happens that renders them unfit for other uses, they will serve for a waggon or team ; but a heavy-



shouldered horse, at best, is neither fit for the saddle nor for a coach, nor indeed for any thing that requires expedition. But that the reader may understand what is here meant by a heavy-shouldered horse and a thick-shouldered horse, it will be necessary to observe, that some horses have their shoulders full, and yet no ways loaded; and when this proceeds only from the largeness of the bones and muscles, and when these are firm, and not loose and flabby, such shoulders will be sufficiently pliable. But when the shoulders are loaded with flesh, and the breast or bosom is also fleshy, the muscles in this case are generally clogged, which being the instruments of motion, such horses can never step out with freedom, but as if they went upon stilts. But the worst sort of all others are those where the breast projects and hangs over, so that the fore-legs are placed backwards, and appear as if they were stuck into a horse's bricket. Some horses are greatly charged with flesh, or rather may be said to be gross upon the top of their shoulders, and all over their withers, which however is more an inconvenience than any hindrance to their motion; besides that this fleshiness often abates with exercise. It may be observed, that some thick-shouldered horses have also very short thick necks. These are usually the most fleshy of all others, and are worse than those that are thick-shouldered, and at the same time small and slender-necked; having this additional ill quality, that they are almost always heavy upon the hand.

The diseases of this part have been named by farriers *shoulder-wrench*, *shoulder-pight*, *shoulder-splait*, &c. Gibson says, to understand the nature of these infirmities, it will be necessary to observe, that the blade-bone of the shoulder is fixed to the body, not by articulation or jointing, but by apposition; being laid to the ribs, and fastened by the muscles, which lie under and above it: so that when a horse happens to receive a blow or strain in the shoulder, the tendons of these muscles are stretched and relaxed; and when that is violent, it is called shoulder-splait, and becomes more or less dangerous, as the horse is more or less hardy.

Every one knows that a slip, false step, or any undue position of a horse's legs, will strain and weaken the shoulder, by stretching those ligaments; and sometimes the shoulder is affected by a hurt or bruise on the withers; the reason of which may be easily enough conceived, by any one who will examine into the structure of those parts: but when the accident proves not so violent as to cause inflammation and swelling, it is not so easily discerned, whether the lame-

ness be in the shoulder, in the foot, or any other joint. But the infirmities of the shoulders may be distinguished from those of the feet, by having a horse put to exercise: for if the lameness be in the feet, he will halt most when he is ridden; but if it be in the shoulder, the warmer he grows the less he will halt; and, if the wrench be violent, he will be apt to cast his legs outwards, forming a circle as he goes. But if none of these signs are perceivable, the surest way is to turn him short on the lame side, for that tries the muscles the most of any thing; so that if the hurt be in the shoulder, he will set his foot on the ground hardily, and endeavour to favour his shoulder.

In the cure, a distinction ought to be made between an old injury and one that is newly received: for in a fresh strain the first intention is to apply such things as are proper to allay the heat and inflammation, and prevent a too great flux of blood to the part; whereas in an old complaint a very different course is to be observed. See the articles *LAMENESS* and *STRAIN*, where this point has been attended to.

Mr. JOHN LAWRENCE observes, that strains in the *shoulders* of horses are much less frequent than in the hinder limbs. "As to the symptoms," says he, "there is generally a *deceptio visus*, all lame horses appearing affected in the shoulders, however sound those parts may be, which is the occasion of the perpetual blunders of grooms and farriers, whose sole rule of judgment is from appearances and custom. The only sign to be depended upon within my knowledge, is the motion of the fore-arm, or a tenderness and tumour in the parts. The muscles or ligaments of the shoulder may be relaxed, or even a dislocation may possibly, but not very probably, happen; contusion and stunting of the point of the shoulder may ensue, from running against any hard body; and lastly, notwithstanding the merriment of Osmer, a horse may be really shook in the shoulders, of which I have been too often convinced. This last is a disease of inflammation and contraction, analogous with *furbating* and the foot-founder, and to be removed (when curable) by rowels and running abroad. For a dislocation, swimming is generally recommended, or reduction of the joints by extension and counter-extension (the inflammation being previously allayed by relaxing applications) under the care of an able veterinary surgeon; afterwards bandage, astringents, and long rest, are to be resorted to."

**SHOULDER OF A BRANCH**, in the manege, is that part of it which begins at the lower part of the arch of the banquet, over-against the

middle of the *fonceau* or *chaperon*, and forms another arch under the banquet. See *BRANCH*.

**SHOULDER-PEGGED HORSES** are so called when they are gourdy, stiff, and almost incapable of motion.

**SIALAGOGUES** (from *σιαλον*, *saliva*, and *αγω*, *duco*, *to draw forth*), comprehend all such medicines as produce a flow of saliva into the mouth, from the glands named salivary, there situated. They have been divided by some authors into *three classes*. First, such as immediately act upon the salivary glands. Secondly, all such as occasion a flow of saliva into the mouth, by intercepting a flux of moisture into other parts. Thirdly, all those substances which are *supposed to break down the sanguinary mass*, and by that means supply the mouth with too great a proportion of fluids, thus dissolved. At present they are divided into *internal* and *topical*. The only internal one of which we make use is mercury, and its preparations, which produces its effect when thrown into the habit, by exciting its elective power and stimulating the salivary system. The topical ones are such as promote a flow of saliva by external application, viz. squills, pellitory, tobacco, cloves, calamus aromaticus, and a variety of such-like stimulating substances.

**SIBBALDIA**, bastard cinquefoil, a genus in Linnæus's botany. He enumerates three species.

**SICKNESS IN HORSES.** See the articles *DISEASE* and *MEDICINE*.

**SICKNESS, FALLING,** or epilepsy. See *EPILEPSY*.

**SIDA**, Indian mallow, a genus in Linnæus's botany. He enumerates twenty-seven species.

**SIDEWAY**, in the manege. To ride a horse sideways, is to passage him, to make him go upon two treads, one of which is marked by his shoulders, and the other by his haunches.

**SIGMOIDES**, or **SIGMOIDALES**, are valves thus called, from the Greek *sigma*, and *ειδος*, *forma*, *shape*, because of their resemblance in figure.

**SIGNS**, the same as *symptoms*: but called *signs*, as they indicate, and *symptoms*, as they are, the effect of disease. See *DIAGNOSTIC*.

**SIGUETTE**, in the manege, a cavesson with teeth or notches; that is, a semi-circle of hollow and vaulted iron, with teeth like a saw, consisting of two or three pieces joined with hinges, and mounted with a head-stall. There is a sort of *figuette* that consists of a round iron, all of one piece, sewed under the nose-band of the bridle, that it may not be in view.

**SILEX**, flint; one of the earths. See *FLINTS*.

**SILIQUEA**, an ancient weight, equal to three grains, and one twenty-eighth.

**SILIQUEA**, in botany, is the seed-vessel, husk, or pod of such plants as are of the leguminous kind. By Linnæus, it is defined a pericarpium of two valves, wherein the seeds are fastened along both the futures or joinings of the valves.

**SINAPIS**, mustard; a genus in Linnæus's botany. He enumerates seventeen species. The college have retained the seed of the *sinapis nigra* LINN. or common black mustard: a cataplasm, cataplasma sinapeos, is directed to be made with it. Gibson speaks highly of the virtues of mustard as a veterinary remedy.

**SINAPISM**, is a cataplasm made chiefly of mustard, to apply outwardly to any particular part. This is a powerful stimulant to the human skin, but little calculated for veterinary uses.

**SINCIPUT**, the forepart of the head. See *CRANIUM*.

**SINEW**, in anatomy, properly denotes what we call a tendon. See *TENDON*, and *BACK-SINEW*.

**SINEW-SHRUNK**, is said by farriers of a horse that is over-ridden, and so worn down with fatigue, that he becomes *gaunt-bellied*, as it is called, through a contraction of the two sinews that are under his belly. See the article *BELLY*.

**SINEW-SPRUNG**, a name given by the old farriers to a violent over-reach, in which a horse strikes the toe of his hinder foot against the finew of the fore-leg. See the article *ATAINT*, &c.

**SINGULTUS**, the hiccup, is a convulsive motion of the stomach, and parts adjacent, particularly the diaphragm. It is a complaint scarcely known to brute animals.

**SINUS**, signifies any cavity, and anatomists variously apply it to many parts of an animal body, as the *sinus laterales*, and *sinus longitudinales*. See *BRAIN*.

**SINUS OSSIUM**, are those cavities of the bones which receive the heads of other bones, and so of many other parts.

**SIRENES**, a sort of worms. See *BOVINE AFFECTION*.

**SIRIASIS**, (σιριασις), inflammation of the brain. Vogel says it is a fever proper to infants.

**SISON**, stone-parsley, a genus in Linnæus's botany. He enumerates seven species.

**SIT-FAST**. This proceeds generally from a warble (see *WARELES*), and is a horny tu-



mour on a horse's hide. If it cannot be dissolved and softened by rubbing with mercurial ointment, it must be cut out, and then treated as a fresh wound.

**SITIOLOGICE** (from *σιτος*, *aliment*, and *λεγω*, *to speak*), that part of medicine which treats of aliments.

**SITIS**, thirst. See **WATER**.

**SIUM**, skirret, or water parsnep, a genus in Linnæus's botany. He enumerates twelve species. The London college have introduced the *sium nodiflorum* LINN. or common creeping water parsnep, into their Pharmacopœia.

**SKELETON**, the bones of an animal, cleared of the soft parts usually attached to them, and placed, by artificial means, in their natural situation. Under the articles **BONES** and **OSTEOLOGY**, we have exhibited the skeleton of the horse in different views; and we now introduce a third representation of the bones in Plate XXVIII. to which the following is a description.

#### *Bones in the Head.*

**A A** That part of the os frontis which helps to form the orbit of the eye.

**abb c** The occipital bone, of which **abb** is that which, in the skeleton of a horse, is called the noll bone; **c** a future common to this bone with the os sphenoides.

**def** The temporal bone; **d** the zygomatic or jugal process; **e** a future common to the temporal bone with the os sphenoides; **f** the bony meatus or entrance of the ear.

**ghh GG** *Ossa palati*; **g** the orbitary part; betwixt **g** and **A** is a future common to this bone with the orbitary part of the frontal bone; **hh** the portia palatina, or part which completes the arch of the palate; betwixt **h** and **b** is a future formed by the union of these two bones.

**iikllmmnn** Os sphenoides; **ii** denote roughnesses into which the anterior recti muscles of the head are inserted; **mm** the pterygoid apophyses; **ln, ln** the large lateral processes of the multiform or sphenoidal bone.

**p q** Os jugale or cheek bone; betwixt **p** and **d** is a future common to this bone with the zygomatic process of the temporal bone; **q** a future common to this bone with the upper jaw bone.

**rrstuvw, tw** The *ossa maxillaria*, or great bones of the upper jaw; **rrst** the posterior part of this bone; **s** the jugal apophysis; **t** the apophysis palatina of the posterior part of this bone; betwixt **t** and **t** is a future formed by the

union of these two bones; **uv** the anterior part of this bone; betwixt **r** and **u** is a future, formed by the union of the anterior with the posterior part of this bone; **w** a process belonging to the anterior part of this bone, which helps to form the arch of the palate.

**xy** Os vomer; **y** that part which forms the posterior part of the septum narium.

**1 2 2 z z** Os ethmoides; **1** the part which helps to form the orbit; **2** the labyrinth of the nostrils; **z** *conchæ narium superiores*, the upper turbinated, or spongy bone, or the upper shell of the nostrils.

**3 3 3** *Conchæ narium inferiores*, the lower turbinated or spongy bones, or the inferior spongy laminæ of the nose.

**3 3 3** *Dentes molares*, or grinding teeth of the upper jaw.

**4** One of the canini of the upper jaw.

**5** One of the *dentes incisores*, cutting teeth, or nippers of the upper jaw.

**6 6 7 8** *Maxilla inferior*, or the lower mandible, or jaw bone; **8** its condyle or head, by which the mandible is articulated to the temporal bone.

**9** *Dentes incisores*, the cutting teeth, or nippers of the lower jaw.

#### *In the Spine.*

**abb c d e** The atlas, or uppermost vertebra of the neck; **a** the protuberance, tubercle, or inequality on the posterior part of this vertebra, which seems to be in the place of a spinal apophysis; **bb** the transverse process; **c** the superior and posterior notch; **d** the transverse hole; **e** a large tubercle on the anterior part of this vertebra.

**f g g h h i i k l** The epistrophæus, or second vertebra of the neck; **f** the spinal process; at **g g** the spine is divided into two, and continued to the lower oblique processes; **h h** the lower oblique processes; **i i** the transverse processes; **k** the superior part of its body, which is received by, and sustains the atlas; **l** the transverse hole.

**k l l m m n n p** The third vertebra of the neck; **k** the spinal process; **l l** the upper oblique processes; **m m** the lower oblique processes; **n n** the transverse processes; **p** the internal side of the body of this vertebra.—This explanation will serve for those of the neck which are below this; only it is to be observed, that **o** marks the upper part of the fifth vertebra, where it articulates with the fourth at **p**; **r** denotes the anterior oblique process of the sixth vertebra, and **q q** those parts of the oblique pro-

cesses which are incrufted with smooth cartilages.

*rr & ss & tt &c* The vertebræ of the back; *rr &c* the spinal processes; *ss &c* the bodies; *tt &c* the ligaments interposed betwixt the bodies of the vertebræ, tying them to each other.

*uu & vv & xx & yy & zz &c* The vertebræ of the loins; *uu &c* the spinal processes; *vv* the bodies; *xx &c* the transverse processes; *yy* the ligaments interposed betwixt the bodies of the vertebræ, tying them to each other; *zz &c* the openings betwixt the transverse processes through which the nerves come from the medulla spinalis.

*1 1 1 1 1 2 2 2 2 3 3 3 3 4 4 &c 5 5 5 5* The os sacrum, or great bone of the spine; *1 1 1 1 1* the rough part, composed of the transverse processes of this bone; *2 2 2 2* the spinal processes; *3 3 3 3* the anterior part, which, in a young horse, is divided into as many bodies as there are spines, betwixt which, in the parts *5 5 5 5*, are bony lines that were formerly ligaments.

*6 6 & 7 7 &c 8 8 & 9 9 &c* The bones of the coccyx or tail; *6 6 &c* the transverse processes; *7 7 &c* the spinal processes; *8 8 &c* the bodies; *9 9 &c* the ligaments interposed betwixt the bodies of the bones of the tail.

#### *In the Thorax and Shoulder-blades.*

*aa* The sternum.

*b* The ensiform cartilage.

*cc & dd & ee & ff & gg &c* The ribs; *cc &c* the parts by which they articulate with the bodies of the vertebræ; *dd &c* the cartilages by which they are continued to the sternum, eight on each side; *ee &c* the external side of the ribs; *ff &c* the internal side of the ribs; *gg &c* the cartilages of the false ribs, which are ten on each side.

*hiikl* The right scapula; *h* its spine; *ii* its basis; *k* a cartilaginous continuation of its basis; *l* its fossa sub-spinalis.

*mmno* The internal side of the left scapula; *n* the coracoid apophysis; *o* a small part of its neck.

#### *In the Pelvis.*

*abcdefgghbbhi, Abcfghb* The innominate or basion bones, including three others; *abcd* the os ilium on the right side; *bc* its spine; *da* a protuberance, from which arises the rectus muscle of the leg; *ef* the os ischium or high bone; *e* the acute process; *f* the tubercle; *gg* the os pubis; *hhbb* the great foramen of the ischium and pubis; *ii* the external margin of the acetabulum.

#### *In the upper Limbs.*

*abcd, A* The humeri or bones of the arm; *ab* the upper head; *b* the part of the head which is joined to the cavity of the scapula, covered with a smooth cartilaginous crust; *c* a protuberance into which the teres minor is inserted; *d* the external condyle of the lower head; *A* a small part of the head of the right humerus.

*efgg, g* The ulnæ; *e* the olecranon; *f* the part which articulates with the humerus; *gg* the lower part of the ulna, which, in aged horses, becomes one bone with the radius.

*hiklmnop, klmnop* the radii; *hi* the upper head of the radius; *klmno* the lower head; *k* a sinus, through which goes the tendon of the extensor minimi digiti in the human body; *m* the part which articulates with the os sphenoides, or naviculare, incrufted with a smooth cartilage; *n* the part which articulates with the os pisiforme or orbiculare, incrufted with a smooth cartilage; *o* a sinus which receives the os lunare when this joint is bent as much as it can be.

*Ppqrstuvwxyz, Ppqrstuvwxyz* The bones of the carpus; *P* os pisiforme or orbiculare; *pq* os sphenoides or naviculare; *p* the part covered with a smooth cartilage for its articulation with the radius; *r* os lunare; *s* os cuneiforme; *tu* os trapezium; *t* the cartilaginous incrustation by which it articulates with the os sphenoides; *vx* os magnum, or the great round-headed bone of the wrist; *w* the round head covered with a smooth cartilage for its articulation with the os lunare; *yz* the unciform or hook-like bone of the wrist; *y* the smooth cartilaginous incrustation for its articulation with the cuneiform or wedge-like bones of the wrist.

*1 2 3 4 5 6 7, 1 3 4 5 6 7* The metacarpal bones; *1 2 3* a bone which is equal to the metacarpal bones of the middle and ring-fingers both together in the human skeleton; *1* the head, by which it articulates with the three lower bones of the carpus; *2 2 3* the lower head, incrufted with a smooth cartilage for its articulation with the ossa sesamoidea; *4 5* an imperfect metacarpal bone in the place of that which, in the human skeleton, belongs to the fore-finger; *4* the upper head, which articulates with the os trapezium; *5* the lower head, which is very small, and (the bones of the fore-finger being wanting) forms no articulation; *6 7* an imperfect metacarpal bone in the place of that which, in the human skeleton, belongs to the little finger; *6* the upper head, by which



it articulates with the hook-like bone of the carpus; 7 the lower head, which is very small, and (the bones of the little finger being wanting) forms no articulation.

89 89 *Ossa sesamoidea*, two bones which are always to be found in this joint; they serve to throw the bending tendons farther from the center of motion in this joint, and form a proper groove for them to slide in.

10 10 The bones of the first phalanx or order of bones in the fingers, in the horse called the great pasterns.

11 11 The bones of the second phalanx, called in the horse the little pasterns or coronary bones.

12 12 The bones of the third phalanx, or the coffin bones.

13 13 Sesamoid bones, lying over the posterior parts of the articulations of the coffin bones with the coronary bones, or the two last phalanges of the fingers.

*In the lower Limbs.*

*a b c d d e f g h i k, a c d d e f g h i k* *Ossa femorum*, or the thigh bones; *b* the head, incrusted with a smooth cartilage for its articulation with the acetabulum; *c* the less trochanter; *d d* the great trochanter; *e* a very prominent part of the linea aspera, into which the external glutæus is inserted along with part of the fascia lata; *f* a large fossa or notch, out of and from the borders of which the external head of the gemellus and the plantaris muscles arise; *g* a roughness from which arises the internal head of the gemellus; *h* the outer condyle of the lower head, covered with a smooth cartilage; *i k* the inner condyle, at *i* incrusted with a smooth cartilage.

11 The patellæ, or knee-pan bones.

*m m* The outer semi-lunar cartilages, which are interposed in the joints of the knees.

*n n* The inner semi-lunar cartilages, which are interposed in the joints of the knees.

*o p q r, o p q r* The tibiæ, or great bones of the legs; *o p* the upper head; *r* the lower head.

*s t, s t* The fibulæ, or small bones of the legs; *s* the upper head; *t* the lower extremity which ends here almost in a point.

*u w x x y z & I, u w x x y z & I* The bones of the tarsus.

*u w u w* The calcanei, or heel bones.

*x x x x* The astragali, or cockal bones.

*y y* The cubical bones of the tarsus.

*z z* The navicular bones of the tarsus.

*& &* The middle cuneiform bones of the tarsus.

*i i* The less cuneiform bones of the tarsus.

2 3 4 5 6 7, 2 3 4 5 6 7 The bones of the metatarsus, or instep; 2 3 a bone which is equal to the metatarsal bones of the second and third little toes, both together, in the human skeleton; 2 the upper head, which articulates with the three lower bones of the tarsus; 3 the lower head, covered with a smooth cartilaginous crust; 4 5 an imperfect metatarsal bone, in the place of that, in the human skeleton, which belongs to the first of the small toes; 4 the upper head, by which it articulates with the less cuneiform bone of the tarsus; 5 the lower head, which is very small, and (the bones of the first of the small toes being wanting) forms no articulation; 6 7 an imperfect metatarsal bone in the place of that which, in the human skeleton, belongs to the little toe; 6 the upper head, by which it articulates with the cubical bone of the tarsus; 7 the lower head, which is very small, and (the bones of the little toe being wanting) forms no articulation.

89 89 *Ossa sesamoidea*: they are bones which are always to be found in these joints, two in each; they serve to throw the bending tendons farther from the center of motion, and form a proper groove for them to slide in.

10 10 11 11 12 12 The bones which are in the places of the three phalanges or orders of bones in the human skeleton: with farriers the first are called the great pasterns; the second the little pasterns or coronary bones; and the third the coffin bones.

13 13 Sesamoid bones lying over the posterior parts of the articulations of the coffin bones, with the coronary bones.

SKIN. See CUTIS.

SKITTISH, in the manege. A horse is said to be *skittish* that exceeds in his paces, and leaps instead of going forward.

SKULL. See CRANIUM.

SLABBERING BIT, in the manege. See the article MASTIGADOUR.

SLACK. The term SLACK A LEG, in the old manege, was used in speaking of a horse when he tripped or stumbled. *Slack the hand*, is to slack the bridle or give a horse his head.

SLEEP. See NARCOTICS.

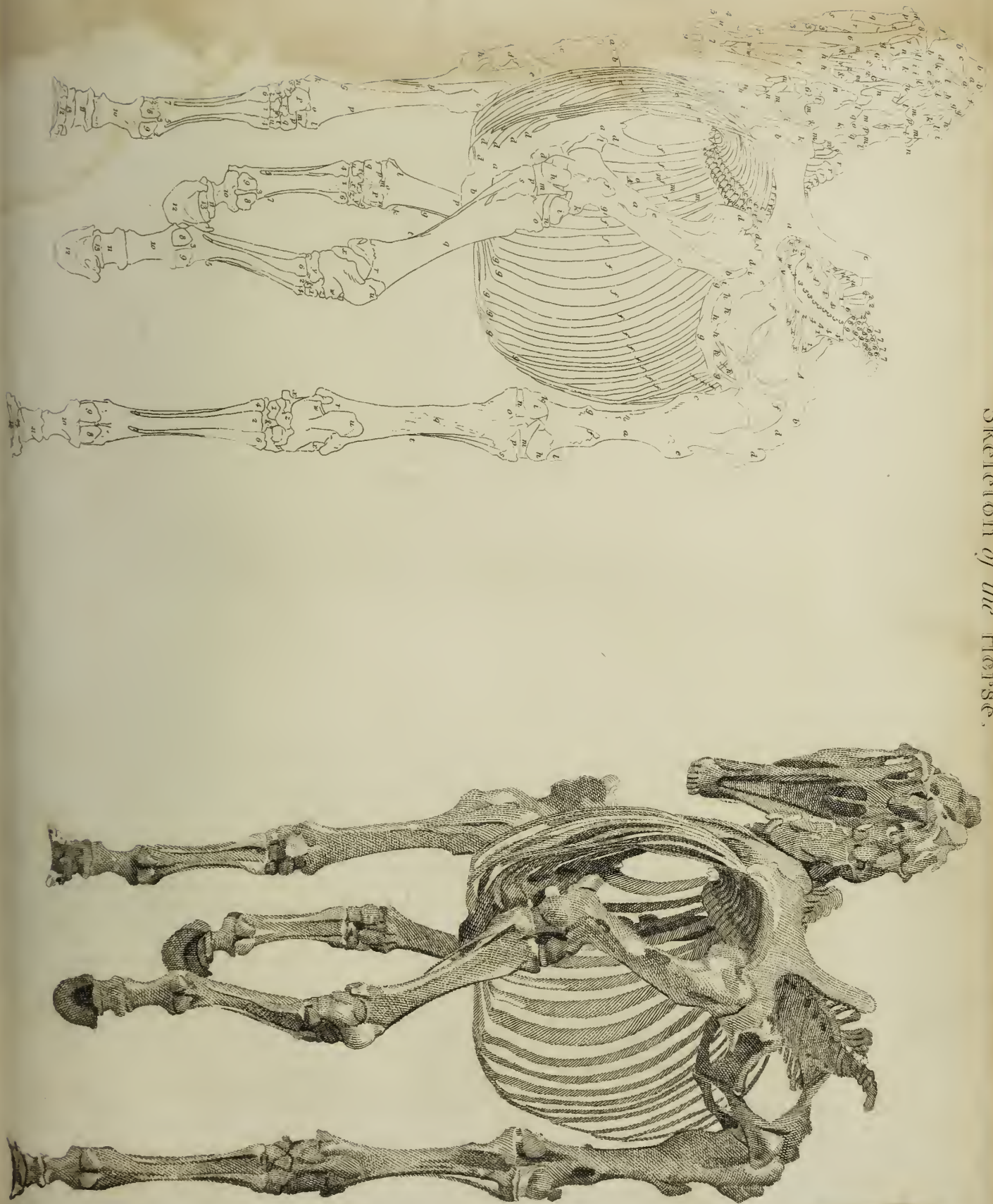
SLEEPING EVIL. See LETHARGY.

SLIPPING, a term used by the farriers to denote abortion in animals. See ABORTION. Thus, mares are said to *slip* their colts; and cows, their calves. On the latter subject, see some cautions under the article Bos.

SMELLING. See SENSATION.

SMILAX, rough bind-weed, a genus in Linnaeus's botany. He enumerates fourteen species.

*Skeleton of the Horse.*







**SNAFFLE**, a well known kind of bridle. The snaffle is a very slender bit-mouth without any branches. They are in very general use. See **BRIDLE**. The common *snaffle*, or *small watering bit*, is only a scatch-mouth, with two very little straight branches, and a curb mounted with a headstall, and two long reins.

**SNAKE-ROOT**. See **SERPENTARIA**.

**SNEEZING**. See **STERNUTATION**.

**SNORT**, a kind of harsh sound that a mettlesome horse sends through his nostrils, as if he had a mind to expel something from his nose that hindered his taking breath. It is, in fact, sneezing.

**SOAP**, a compound of oil, tallow, and other substances, with lime and pot-ash. "The Venice or Castile soap," says Gibson, "is only made use of inwardly; which, as it is both very penetrating and deterfive, is therefore of greatest efficacy in cleansing and scouring the glands and smallest passages, and rarifying the juices contained in them. Upon that account, when discreetly given, it becomes of great service in several diseases of the viscera; but particularly in those of the liver and kidneys. It is said to be a very great specific in the jaundice; and is therefore administered with admirable success to horses labouring under that distemper. Its dose is from half an ounce to an ounce. The black soap has so much of pot-ash lixivium in it, as renders it extremely penetrating: wherefore it is seldom to be made use of, but in outward applications to remove excessive pains in the joints and nervous parts. It is often used for swellings or galling occasioned by the saddle, or any other accident." Common white soap, however, will answer these purposes equally well, and is considerably cheaper.

**SODA**. A species of salt. The salt is the common mineral alkali, whose medicinal effects are nearly similar to those of kali. See **KALI**.

**SOILING**, a term denoting the feeding of cattle, under cover, on recent vegetables. See **FOOD**.

"*Soiling* horses in the house," says Gibson, "proves sometimes beneficial, and sometimes hurtful, either when a horse's case has not been rightly judged of, or when the article made use of for soiling happens to be bad of its kind. Geldings are not frequently soiled, but chiefly stone-horses, because it is difficult to procure good inclosures for them to run single abroad, without much charge and trouble; for two of them will seldom agree long in one place. And therefore I should never advise any one to turn stone-horses to grafs, or soil them in the

house, unless they have such complaints as absolutely to require it; for most of the disorders for which stone-horses are soiled may be remedied by feeding on straw for a time instead of hay, which they will dispense with much easier than geldings: for many of our geldings are apt to grow faint and weak without hay, and few of them can be brought to eat straw readily.

"If a stone-horse happens to be lamed in such manner as to require a place where he may range at pleasure, then an orchard, or some field that is exceedingly well fenced, should be provided for him; but if he has no lameness, but some other disorder, as heat, and eruptions on his skin, that may require soiling, or if geldings or mares are to be soiled for any such complaints, care should be taken to provide such herbage for them as is young, tender, and full of sap, whether green barley, tares, clover, or any thing else the season produces: though green barley is generally preferred to all others for this purpose; but then it should be cut before it shoots into the ear, while it is full of sap and moisture, for afterwards it turns dry, and the stem grows tough and hard to digest. The same caution is no less necessary with respect to clover and tares, that these be young, and cut fresh once every day or oftener, otherwise they may easily do more hurt than good; for though a horse is so strong by nature, and more vigorous and active than perhaps any other creature of his size, yet his stomach and intestines are but thin, if compared with those of some other animals of the same bulk, and more easily distended, and therefore he seems to require food of easier digestion than the horned cattle. This indeed is manifest by the choice he makes for himself when at grafs, and therefore when the herbage with which a horse is soiled happens to be old, though a good feeding horse will eat it for want of something better, yet I have several times known disorders to follow upon it, by this kind of aliment stopping in the intestines and obstructing them, which has been attended with great inward heat, heaviness of the eyes, reeling, loss of appetite, and other untowardly symptoms, until a plentiful discharge of dung has been procured by emollient glysters. I have seen the faeces come away in great clods, very hard, black, and foetid, not unlike what has lain a considerable time mellowing and rotting on a dunghill, in the same manner as happens sometimes to horses that are fed with rye-grafs and clover, where they have not sufficient work or exercise to digest it. I have known others, perhaps where



the digestive faculty has been stronger, break out about the neck, rump, and other parts of the body, and sometimes on the limbs, with many other signs of a surfeit, to the great surprise and disappointment of the owner. For all such herbage, when it is divested of its sap, has very soon a tendency to putrefaction, and therefore not only induces a weak blood, but obstruction in the first passages. Hence, those who would succeed well in foiling horses should be situated near to the place where it is cut, that it may be fresh, at least every morning, and leave off when it becomes old and rank, or else go on with some other herbage which is of later growth, till the horse has been sufficiently cooled and purged.

"Some horses purge but little in foiling, others a great deal more than what is usual at grass; which may sometimes be owing to the goodness or badness of the herbage, to its being younger or older, fresher or staler, or perhaps sometimes to the difference of the ground on which it grows. However, this may be as often owing to the difference of constitution in horses as to any other cause; for when several horses are foiled together, we see some purge till they fall away and grow lean, some purge very gently, and others scarcely purge at all, though they are all fed alike, and with the same herbage. The same peculiarity is often observable at grass also; which only shews, that some horses are not so easily moved to purge as others, though it is probable those that purge the least stale the most plentifully, which in some cases may be equally advantageous.

"When horses lose their flesh much in foiling, they should be taken off to a more solid diet, otherwise they will grow so poor and weak as to require some time afterwards before they recover their flesh. In this there is a great difference between foiling and grazing; for if horses lose their flesh never so much at grass, yet they soon grow fat after the purging, for there they have the benefit of the open air, and great choice, an advantage which horses at foil have not, but are forced to be taken off abruptly to dry food. And therefore when a horse has done foiling, he ought to be continued some time to an open diet, at least a fortnight or three weeks. A little sweet bran may at first be mixed with his oats, and his hay sprinkled with water just when it is put into the rack, and every day gentle exercise, increasing both his food and exercise by degrees. He should also be dressed gradually, and only littered down in the night, and not to lie constantly on his litter for the first fortnight, all sudden changes from

hot to cold, or from cold to hot, being hazardous; after which he may be curried and dressed as usual, and his diet increased, to render him fit for business. Indeed we find some horses so hardy, that they scarce need these precautions; yet no man can well err in a reasonable care to prevent accidents, which sometimes happen where they are least expected."

Mr. John Lawrence says, "in my opinion, *natural grass* is superior, and more likely to answer the intended purpose of stable foiling, than tares or any other herbage; from repeated trials I have found, that horses and horned cattle prefer it to all other green meat, without even excepting the so often and highly celebrated lucern. The great bulk of the artificial grasses is an important object, but no doubt, I conceive, can be entertained of the superior quality of the natural, either green or dry. When the vast consequence of grass is considered, both in relation to quantity and quality, the neglected state of our meadows and pasture lands, in many parts of the country, may well be wondered at, and the question naturally asked, why the simple herbage should not be cultivated with the same care and assiduity as corn: I have known it repay immensely the expence of manure, of pure and good seed brought from a considerable distance, and of the most attentive culture. There cannot be a more improvident practice, whether in a public or private view, than withholding so tenaciously, old, foul, unproductive meadow from the plough; the breaking up of which would pay so abundantly in the first instance, and still more largely in the succeeding grass crops. It is obvious nothing more is needed, in this case, than to adopt improved methods of laying down to grass."

The practice of *foiling* cattle is become very general, and is not only beneficial as contributing to health, but as it refers to the question of agricultural economy. There cannot be a doubt but that the nutritious quality of the grasses is greatly diminished by their conversion into hay, neither does it admit of a question whether dry or succulent provender is the most wholesome and natural to the digestive organs.

**SOLANUM**, night-shade. A genus in Linnaeus's botany. Of species he enumerates forty-six, most of them poisonous.

**SOLE OF A HORSE**, that plate of horn which, encompassing the fleshy sole, covers the whole bottom of the foot. The sole ought to be thick and strong, and the shoe of a horse so set upon the hoof as not to bear upon it (see **SHOEING**); for otherwise the sole would be hurt, and not

only make the horse lame, but destroy the flesh that separates it from the coffin-bone.

It has been the practice of some farriers to take out the *sole*. It is done without touching the outside of the hoof, for taking off the crust makes a *hoof-cast*. A horse that has been unshod, it is said, will recover in a month's time.

This custom of the smiths and farriers of *drawing horses' soles*, in order to relieve the inflammation of the part, and to promote a free perspiration, we could never perceive the least benefit accruing from; as this management leaves such a weakness and tenderness behind, that the poor creatures ever after scarce fail of labouring under an incurable lameness. Nor has *La Fosse*, though he has recommended the practice, produced a single instance of its success. In lieu therefore of tearing the sole up by the roots, Mr. Wood substitutes the following method, viz. In the first place, in order to take off from the tension of the vessels, and lessen the inflammation, blood must be drawn away at the toe of the horse, and above the hoof. After which, apply the subsequent poultice, viz.

Take linseed boiled in water to a pulp.

Add goose-grease, tar, and cow-dung;  
and boil them all together to the consistence of a poultice.

Let this be put to the foot, and all round the hoof; and above the coronet apply a cold charge. Where there is no great inflammation, the addition of a little soap to the poultice will very much assist in removing any coagulation of the blood in that quarter.

When the foot is shaped like the back part of an oyster-shell, and the sole higher than the hoof, so that the whole foot is quite filled up on the lower part, it is called a *crowned sole* by farriers.

**SOLIDS.** The whole quantity of solid matter in the body is possibly no more than the mere matter of the nerves, filled up, and distended by the nutritious juices, as appears from the observations of Malpighi; and the last divisions of the solids are hardly distinguishable from fluids. Haller, however, observes in his Physiology, that the solid elementary parts of our fibres are a calcareous earth kept together by a gluten; that, in a natural state, when bones lose their gluten, this earth falls into powder; and that in this earth there is a portion of iron. In a foetus the gluten forms about two thirds of the substance of the bones; and in an adult, nearly half of the bone is gluten. The solids contain much air, and the more solid a part is,

the more air it contains. The bones contain a quantity, which, when set at liberty, is two hundred times the bulk of the bone. Air seems to be the primary bond of the elements; for until the air is expelled the other parts do not separate.

**SOLÆUS**, a muscle so called from its likeness to a sole-fish. It is shewn in Plate XX. See the description of "*the lower Limbs*," under **MUSCLES**.

**SOLITARI**, diseases affecting any one part of the body.

**SOLUTION** is an intimate commixture of solid bodies with fluids into one seemingly homogeneous liquor. The dissolving fluid is called a *menstruum* or *solvent*; and the body dissolved, the *solvend*.

Solution cannot take place unless one of the bodies be in a fluid state, and this fluidity is effected either by water or fire; hence solution is said to be performed in the humid or in the dry way.

Hence, if a quantity of brimstone be dissolved in a solution of fixed alkali, the brimstone is said to be dissolved in the humid way; but if the brimstone be dissolved by melting it in a pan with the dry alkali, the solution is said to be done in a dry way: but one of the substances is thrown into a state of fluidity by the powers of heat, before the solution takes place; hence the rectitude of the first position. If one of the two bodies to be united is transparent, the solution, if complete, is a transparent compound. But if the solution be opaque and milky, as is the case with soap and water, it is then considered as incomplete.

The principal menstrua made use of in pharmacy are *water*, *vinous spirits*, *oils*, *acid*, and *alkaline liquors*.

1. *Water* is the menstruum of all salts, of vegetable gums, and of animal jellies. Of salts it dissolves only a determinate quantity, though of one kind of salt more than another; and being thus *saturated*, leaves any additional quantity of the same salt untouched.

Experiments have been made for determining the quantities of water which different salts require for their dissolution. The accuracy of some of these has been called in question by the chemists of modern times; there is no doubt, however, of their correctness in a general way. Mr. Eller has given a large list in the Memoirs of the Royal Academy of Sciences of Berlin for the year 1750, from which the following table is extracted.



*Table of the solubility of fluids.*

Eight ounces by weight of distilled water dissolved

	oz.	dr.	gr.
Of Refined sugar . . . . .	24	0	0
Green vitriol . . . . .	9	4	0
Blue vitriol . . . . .	9	0	0
White vitriol . . . . .	4	4	0
Epſom falt . . . . .	4	0	0
Purified nitre . . . . .	4	0	0
Soluble tartar . . . . .	4	0	0
Common falt . . . . .	3	4	0
Sal gemmæ . . . . .	3	4	0
Sal catharticus Glauberi . . . . .	3	4	0
Seignette's falt . . . . .	3	0	0
Alum . . . . .	2	4	0
Sal ammoniac . . . . .	2	4	0
Vitriolated tartar . . . . .	1	4	0
Salt of hartſhorn . . . . .	1	4	0
Sugar of lead . . . . .	1	2	0
Cream of tartar . . . . .	1	0	0
Borax . . . . .	0	4	20

Though great care appears to have been taken in making theſe experiments, it is not to be expected, that the proportions of the ſeveral ſalts, ſoluble in a certain quantity of water, will always be found exactly the ſame with thoſe juſt ſet down. Salts differ in their ſolubility, according to the degree of their purity, perfection, and dryneſs: the vitriols, and the artificial compound ſalts in general, differ remarkably in this reſpect, according as they are more or leſs impregnated with the acid ingredient. Thus vitriolated tartar, perfectly neutraliſed, is extremely difficult of ſolution. The matter which remains in making Glauber's ſpirit of nitre is no other than a vitriolated tartar; and it diſſolves ſo difficultly, that the operator is obliged to break the retort in order to get it out; but on adding more of the vitriolic acid, it diſſolves with eaſe. Hence many have been tempted to uſe an over-proportion of acid in this preparation, and we frequently find in the ſhops, under the name of vitriolated tartar, this acid ſoluble falt. The degree of heat occasions alſo a notable difference in the quantity of falt taken up: in very cold weather, eight ounces of water will diſſolve only about one ounce of nitre; whereas, in warm weather, the ſame quantity will take up three ounces or

more. To theſe circumſtances are probably owing, in great part, the remarkable differences in the proportional ſolubilities of ſalts, as determined by different authors. It is obſervable, that common falt is leſs affected in its ſolubility, by a variation of heat, than any other falt; for water in a temperate ſtate will diſſolve nearly as much of it as very hot water; and accordingly this is the falt in which the different experiments agree the beſt. In the experiments of Hoffman, Neumann, and Petit, the proportion of this falt, on a reduction of the numbers, comes out exactly the ſame, viz. three ounces of the falt to eight of water. Dr. Brownrigg makes the quantity of falt a little more; Dr. Grew, a drachm and a ſcruple more; and Eller, as appears in the above table, four drachms more. So, in the trials of ſix different perſons, made probably in different circumſtances, the greateſt difference is only one-fixth of the whole quantity of falt; whereas in ſome other ſalts there are differences of twice or thrice the quantity of the falt. In the experiment from which the table is drawn, the water was of the temperature of between forty and forty-two degrees of Fahrenheit's thermometer; or above freezing by about one-ſeventh of the interval between freezing and the human heat.

Some ſalts omitted by Eller are here ſubjoined. The firſt is taken from Dr. Grew, and the other four from Neumann.

Eight ounces of water diſſolved

	oz.	dr.	gr.
Of fixt alkaline falt . . . . .	above 8	0	0
Sal diureticus . . . . .	8	0	0
Sugar-candy, both brown and white . . . . .	9	0	0
Sugar of milk . . . . .	0	2	40
Eſſential falt of ſorrel . . . . .	0	1	20

Though water takes up only a certain quantity of one kind of falt, yet, when ſaturated with one, it will ſtill diſſolve ſome portion of another; and, when it can bear no more of either of theſe, it will ſtill take up a third, without letting go any of the former. The principal experiments of this kind that have been made, relative to pharmaceutic ſubjects, are exhibited in the following table, of which the two firſt articles are from Grew, and the others from Eller.

Water, 32 parts by weight,

fully saturated with

dissolved afterwards

		Parts.		
Nitre . . . .	Sal ammoniac . . . .	10		
Common salt . . . .	Nitre . . . .	10	Sal ammoniac . . . .	2
Nitre . . . .	Fixt alkali . . . .	7	Common salt . . . .	2
Common salt . . . .	Nitre, near . . . .	2	Fixt alkali . . . .	2½
Volatile alkali . . . .	Nitre . . . .	4	Sugar . . . .	2
Sal ammoniac . . . .	Common salt . . . .	2½		
Soluble tartar . . . .	Nitre . . . .	2		
Vitriolated tartar . . . .	Fixt alkali . . . .	2		
Glauber's salt . . . .	Nitre . . . .	1	Sugar . . . .	1
Epſom ſalt . . . .	Sugar . . . .	6		
Borax . . . .	Fixt alkali . . . .	2		

In regard to the other claſs of bodies for which water is a menſtrum, viz. thoſe of the gummy and gelatinous kind, there is no determinate point of ſaturation: the water unites readily with any proportion of them, forming, with different quantities, liquors of different conſiſtences. This fluid takes up likewiſe, when aſſiſted by trituration, the vegetable gummy reſins, as ammoniacum and myrrh; the ſolutions of which, though *imperfect*, that is, not transparent, but turbid, and of a milky hue, are nevertheleſs applicable to valuable purpoſes in medicine. It mingles with vinous ſpirits, with acid and alkaline liquors, not with oils, but imbibes ſome of the more ſubtile parts of eſſential oils, ſo as to become impregnated with their ſmell and taſte.

2. Rectified *ſpirit of wine* is the menſtrum of the eſſential oils; reſins and camphor of vegetables; of the pure diſtilled oils, and ſeveral of the colouring and medicinal parts of animals; of ſome mineral bituminous ſubſtances, as of ambergrife; and of ſoaps, though it does not act upon the expreſſed oil and alkaline ſalt, of which ſoap is compoſed; whence, if ſoap contain any ſuperfluous quantity of either the oil or ſalt, it may, by means of this menſtrum, be excellently purified therefrom. It diſſolves, by the aſſiſtance of heat, volatile alkaline ſalts; and, more readily, the neutral ones, compoſed either of fixed alkali and the acetous acid, as the ſal diureticus, or of volatile alkali, and the nitrous acid, as alſo the ſalt of amber, &c. It mingles with water and with acids; but not with alkaline lixivias.

3. *Oils* diſſolve vegetable reſins and balfams, wax, animal fats, mineral bitumens, ſulphur, and certain metallic ſubſtances, particularly lead. The expreſſed oils are, for moſt of theſe

bodies, more powerful menſtrua than thoſe obtained by diſtillation; as the former are more capable of ſuſtaining, without injury, a ſtrong heat, which is, in moſt caſes, neceſſary to enable them to act. It is ſaid, that one ounce of ſulphur will diſſolve in three ounces of expreſſed oil, particularly that of linſeed, but requires ſix ounces of eſſential oil, as that of turpentine.

4. All *acids* diſſolve alkaline ſalts, alkaline earths, and metallic ſubſtances. The different acids differ greatly in their action upon theſe laſt; one diſſolving only ſome particular metals; and another, others.

The *vegetable* acids diſſolve a conſiderable quantity of zinc, iron, copper, lead, and tin; and extract ſo much from the metallic part of antimony, as to become powerfully emetic: they diſſolve lead more readily, if the metal be previously calcined by fire, than in its metallic ſtate.

The *marine* acid diſſolves zinc, iron, and copper; and though it ſcarce acts on any other metallic ſubſtance, in the common way of making ſolutions, it may nevertheleſs be artfully combined with them all, except gold: the corroſive ſublimate, and antimonial cauſtic of the ſhops, are combinations of it with mercury and the metallic part of antimony, effected by applying the acid, in the form of fume, to the ſubjects, at the ſame time alſo ſtrongly heated.

The *nitrous* acid is the common menſtrum of all metallic ſubſtances, except gold and the metallic part of antimony; of which two, the proper ſolvent is a mixture of the nitrous and marine acids, called *aqua regia*.

The *vitriolic* acid, diluted with water, eaſily diſſolves zinc and iron: in its concentrated ſtate, and aſſiſted by a boiling heat, it may be made



to corrode, or imperfectly dissolve, most of the other metals.

The *aërial* acid dissolves zinc, and calcareous earth: and those solutions must be conducted without heat.

5. *Alkaline lixivia* dissolve oils, resinous substances, and sulphur. Their power is greatly promoted by the addition of quick-lime: instances of which occur in the preparation of soap, and in the common caustic. Thus acuated, they reduce the flesh, bones, and other solid parts of animals, into a gelatinous matter. This increased acrimony, in the alkaline fixed salts, is owing to the abstraction of their fixed air; that acid having a greater attraction for quick-lime than alkali.

Solutions made in water, and in spirit of wine, possess the virtues of the body dissolved; while oils generally sheathe its activity, and acids and alkalies vary its quality. Hence watery and spirituous liquors are the proper menstrua of the native virtues of vegetable and animal matters.

Most of the foregoing solutions are easily effected, by pouring the menstruum on the body to be dissolved, and suffering them to stand together for some time, exposed to a suitable warmth. A strong heat is generally requisite to enable oils and alkaline liquors to perform their office: nor will acids act on some metallic bodies without its assistance. The action of watery and spirituous menstrua is likewise expedited by a moderate heat; though the quantity, which they afterwards keep dissolved, is not, as some suppose, by this means increased: all that heat occasions these to take up, more than they would do in a longer time in the cold, will, when the heat ceases, subside again: this at least is most commonly the case, though there may be some instances of the contrary.

The action of acids on the bodies which they dissolve is generally accompanied with heat, effervescence, and a copious discharge of fumes. The fumes which arise during the dissolution of some metals in the vitriolic acid, prove inflammable: hence, in the preparation of the artificial vitriols of iron and zinc, the operator ought to be careful, especially where the solution is made in a narrow-mouthed vessel, lest, by the imprudent approach of a candle, the exhaling vapour be set on fire.—This vapour is the inflammable air of Dr. Priestley, and other modern chemists.

There is another species of solution, in which the moisture of the air is the menstruum. Fixt alkaline salts and those of the neutral kind,

composed of alkaline salts, and the vegetable acids, or of soluble earths, and any acid except the vitriolic, and some metallic salts, on being exposed for some time to a moist air, gradually attract its humidity, and at length become liquid. Some substances, not dissoluble by the application of water in its grosser form, as the butter of antimony, are easily liquefied by this slow action of the aërial moisture. This process is termed *deliquation*.

**SOLUTIVE**, the same as **LAXATIVE**; which see.

**SOMNIFEROUS** (from *somnus*, *sleep*, and *fero*, *to bring*); the same as *narcotics*, *opiates*, &c. which see. Hence also *somnolency*, which is any propensity to sleep, or drowsiness.

**SOPHISTICATION**, counterfeiting or adulterating any thing with what is not so good, for the sake of unlawful gain. This practice unhappily obtains in all the parts of medicine connected either with simples or compounds; and in many cases the cheat is carried on so artificially as to prevent a discovery even from persons of the greatest discernment. See **DRUGS**.

**SOPORIFEROUS** (from *sopor*, *sleep*, and *fero*, *to bring*), that which occasions sleep.

**SOPORARIÆ ARTERIÆ**, the carotid arteries.

**SOPOROSI**, sleepy affections, a diminution of sense and motion.

**SORDES**. When the matter discharged from ulcers is rather viscid or glutinous, it is thus named. This matter is frequently of a brownish red colour, somewhat resembling the grounds of coffee or grumous blood mixed with water. *Sordes*, *sanies*, and *ichor*, are all of them much more fetid than purulent matter, and none of them are altogether free from acrimony; but that which is generally termed *ichor* is by much the most acrid of them, being frequently so sharp and corrosive as to destroy large quantities of the neighbouring parts.

**SORGHUM**, Guinea corn, or white round-seeded Indian millet; a species of *Holcus*.

**SORRANCES**, an unaccountable epithet used among farriers of the old school. In the *Rustic Dict.* it is said to signify two things, viz. "either an ill state or habit of an horse's body, arising from some part diseased; or a looseness of continuity of the parts, which, according to the various circumstances, acquire new names, as fracture, wound, ulcer, rupture, convulsion, cramp," &c.

**SORREL-COLOUR** of a horse. See the article **COLOUR**.

**SOUND**, that impression made on the au-

ditory nerve of an animal by the striking of one hard body against another. See EAR. That air, though concerned in propagating sound, is not sound itself, is evident from sound running almost as fast against the wind as with it.

SOUND, a kind of metallic probe with which surgeons examine cavities that are inaccessible by other means; as in the case of a stone in the bladder.

SOUNDNESS. See BUYING.

SPAGYRIC MEDICINE, or SPAGYRICAL ART, is the same as chemistry, the word importing to *extract*, or *collect*, or *gather together*; because it teaches how to extract and separate the purer parts of substances from mixed bodies. Hence a spagyrist is the same as a chemist.

SPARTIUM, broom; a genus in Linnæus's botany. He enumerates sixteen species. The London College have introduced the top and seed, *cacumen et semen Genistæ*, according to them the *spartium scoparium* Linn.

SPASM (*σπασμα*, from *σπᾶω*, *contraho*, to *contract*), any convulsive motion, because it contracts or pulls the parts it affects. Hence is derived the term *spasmi*, spasmodic diseases. See the articles CLONIC SPASM and TONIC SPASM. In Dr. Cullen's Nosology, this is an order in the class *Neuroses*. The term spasm hath been variously used; in the most common sense it hath signified any preternatural contraction of any particular part of the body, either without any stimulus immediately applied to the part, or which remains after its cause is removed. More properly, spasms are those preternatural contractions which are attended with considerable mobility of the system. Dr. Cullen defines spasm to be preternatural motions of the muscles, or of the muscular fibres; and under the title of *spasmodic affections* he includes all the diseases which consist of a preternatural state of the contraction and motion of the muscular or moving fibres in any part of the body. The *spasmi* have generally been divided into the *tonici* and *clonici*, *spasici*, and *agitatorii* or *motorii*, or *spasmus*, strictly so called, and *convulsions*. But most of the diseases called spasmodic are, in respect to tonic or clonic, of so mixed a nature, that it seems preferable to arrange spasmodic disorders according as they affect the several functions, animal, vital, or natural.

SPASMOLOGY (from *spasmus*, and *λογω*, *dico*, to *discourse*), any treatise on convulsions.

SPASMIUS ILIACUS, the colic. See the article COLIC.

SPASMUS MAXILLÆ INFERIORIS, the locked jaw. See LOCKED-JAW.

SPASMUS OESOPHAGI, a difficulty of swallowing, from a spasm in the gullet.

SPASTICI, spastic or tonic diseases. See SPASM.

SPATULA, an instrument used by apothecaries and surgeons, wherewith they spread plasters, unguents, &c. or stir medicines together.

SPAVIN, a disease on the limbs of horses, which causes them to halt; and of three kinds, viz. the *blood-spavin*, the *bog-spavin*, and the *bone-spavin*.

1. *Blood-spavin* is a swelling and dilatation of the vein that runs along the inside of the hock, forming a little soft swelling in the hollow part, and is often attended with a weakness and lameness of the hock.

The cure should be first attempted with restringents and a bandage, which will contribute greatly to strengthen all weaknesses of the joints, and frequently will remove this disorder, if early applied; but if by these means the vein is not reduced to its usual dimensions, the skin should be opened, and the vein tied with a crooked needle, and wax-thread passed underneath it, both above and below the swelling; and the turgid part suffered to digest away with the ligatures: for this purpose, the wound may be daily dressed with turpentine and honey incorporated together.

In treating the blood-spavin, Mr. DENNY advises repeated blistering, and afterwards a compress of folded linen, moistened in the following lotion, and confined by a long bandage:

Take of Sal ammoniac, four ounces;  
Acetated ceruse, two ounces;  
Vinegar, two quarts;  
Water, four quarts. Mix them.

The horse, he says, should be allowed only walking exercise for three or four weeks.

2. *Bog-spavin* is an encysted tumour on the inside of the hough, or, according to Dr. Bracken, a collection of brownish gelatinous matter contained in a bag or cyst, which he reckons to be the lubricating matter of the joint altered, the common membrane that incloses it forming the cyst: this case he has taken pains to illustrate in a young colt of his own; where he says, when the spavin was pressed hard on the inside of the hough, there was a small tumour on the outside, which convinced him the fluid was within-side of the joint: he accordingly cut into it, discharged a large quantity of



this gelatinous matter, dressed the fore with dossils dipped in oil of turpentine, putting into it, once in three or four days, a powder made of calcined vitriol, alum, and bole: by this method of dressing, the bag sloughed off and came away, and the cure was successfully completed without any visible scar.

This disorder, according to the above description, will scarcely submit to any other method except *firing*, and then the cyst ought to be penetrated to make it effectual: but in all obstinate cases that have resisted the above methods, both the cure of this and the swellings called *wind-galls* should be attempted in this manner. If, through the pain attending the operation or dressings, the joint should swell and inflame, foment it twice a-day, and apply a poultice over the dressings till it is reduced.

3. *Bone-spavin*, is a bony excrescence, or hard swelling, growing on the inside of the hock of a horse's leg. Without entering at all into the cause of this disorder, we shall content ourselves with describing the different kinds of it, by their symptoms, and then enter on the method of cure.

A spavin that begins on the lower part of the hock is not so dangerous as that which puts out higher, between the two round processes of the leg bone; and a spavin near the edge is not so bad as that which is more inward towards the middle, as it does not so much affect the bending of the hock. A spavin produced by a kick or blow is at first no true spavin, but a bruise on the bone or membrane which covers it; therefore not of that consequence as when it proceeds from a natural cause: and those that put out on colts and young horses are not so bad as those that happen to horses in their full strength and maturity; but in very old horses they are generally incurable. The usual method of treating this disorder is by blistering and firing, without any regard to the situation or cause whence it proceeds. Thus, if a fulness on the forepart of the hock comes upon hard riding, or any other violence, which threatens a spavin; in that case, such cooling astringents are proper as are recommended in strains and bruises. These happening to colts and young horses are generally superficial, and require only the milder applications; for it is better to wear them down by degrees, than to remove them at once by severe means.

Various are the prescriptions for the blistering ointment (see *CANTHARIDES*), but the following is particularly recommended by Gibson.

Take of Hog's lard, four ounces;  
Quicksilver, one ounce;  
Venice turpentine, one ounce;  
Spanish flies powdered, a drachm  
and a half;  
Corrosive sublimate, one drachm;  
Oil of origanum, two drachms.

Rub the quicksilver down completely, by triture with the turpentine; then add the lard, and lastly the other ingredients.

The hair is to be cut from the part as close as possible, and then the ointment applied pretty thick over the skin; this should be done in the morning, and the horse kept tied up all day, without any litter, till night, when he may be untied, in order to lie down, and a pitch, or any sticking plaister, may be laid over it, and bound on with a broad tape or bandage, to keep all close. After the blister has done running, and the crust begins to dry and peel off, it may be applied a second time, in the same manner as before; and this second application generally takes greater effect than the first, and in colts and young horses makes a perfect cure.

When the spavin has been of long standing, it will require to be renewed perhaps five or six times; but after the second application a greater distance of time must be allowed, otherwise it might leave a scar, or cause a baldness; to prevent which, once a fortnight or three weeks is perhaps enough: and it may in this manner be continued six or seven times, without the least blemish, and will generally be attended with success.

But the spavins that put out on older horses, or full-aged horses, are apt to be more obstinate, as being seated more inward; and when they run among the sinuities of the joint they are for the most part incurable, as they then lie out of the reach of applications, and are arrived to a degree of impenetrable hardness.

The usual method in these cases is to fire directly, or to use the strongest kind of caustic blisters; and sometimes to fire, and lay the blister immediately over the part: but this way seldom succeeds, farther than putting a stop to the growth of the spavin, and is apt to leave both a blemish and stiffness behind; besides the great risk run (by applications of so severe a nature to the tendinous parts about the joints) of exciting violent inflammation, and destroying the limb. The safest and best way, therefore, is to make trial of the blistering ointment above, and to continue it according to the di-

rections laid down, for some months, if found necessary; the horse, in the intervals, being worked moderately. The hardness will thus be dissolved by degrees, and wear away.

Where the spavin lies deep, and runs so far into the hollow of the joint that no applications can reach it, neither firing nor medicines can avail, for the reasons above mentioned. Though bold ignorant farriers have sometimes succeeded in cases of this sort (by men of judgment deemed incurable) by the application of caustics which act very forcibly, we should prefer a properly prepared cautery, made like a fleam, under the direction of a skilful hand, which may be applied with less danger of injuring either tendons or ligaments. After the substance of the swelling has been properly penetrated by the instrument, it must be kept running by stimulating powders, or mild blistering ointment. Where the spavin lies not very deep in the joint, and the blistering methods will not succeed, the swelling may be safely fired with a thin iron forced pretty deep into the substance, and the part should be dressed as above.

**SPEAR.** The *feather* of a horse, called the *stroke of the spear*, is a mark in the neck, or near the shoulder, of some barbs, and some Turkish and Spanish horses, representing the blow or cut of a spear in those places, with some resemblance of a scar. This feather is deemed an infallible sign of a good horse.

**SPECIES**, a term used variously in logic and metaphysics, for an idea that relates to some other more general one, and has under itself only individuals. In algebra it is those symbols or marks which represent the quantities in any equation or demonstration; and in medicine, those simple ingredients, out of which others more compound are made. But former custom, without any propriety, in pharmacy, affixed it to some aromatic and cathartic powders, which were themselves compounded of many things.

**SPECIFIC GRAVITY**, the appropriate and peculiar gravity or weight which any species of natural bodies have, and by which they are plainly distinguishable from all other bodies of different kinds. By some it is not improperly called relative gravity, to distinguish it from absolute gravity, which increases in proportion to the bigness of the body weighed. Thus, if any body weigh a pound, one as big again will weigh two pounds; and let the bodies be of what nature or degree of specific gravity soever, a pound of one will be as much as a pound of the other, absolutely considered; thus, as commonly said, a pound of feathers is as heavy as a

pound of lead. But if you consider lead and feathers relatively, the specific gravity of the former will be much greater than that of the latter; or lead, bulk for bulk, will be much heavier than feathers, and gold heavier than lead, &c.

**SPECIFICS**, a term by which is not meant such remedies as infallibly, and in all patients, produce salutary effects; but such medicines merely as are more infallible than any other in any particular disorder.

**SPECILLUM**, an instrument with which surgeons search wounds, in the manner of a probe.

**SPECULUM**, an instrument used by surgeons to dilate an external part, in order the more conveniently to get at some part within. As instances we may take the *speculum ani*, which is an instrument to dilate the fundament, in order to extract bones, or any thing that may be there lodged. The *speculum matricis* is an instrument to do the same office with respect to matters obstructing the womb; or to assist in any manual operation relating thereto. *Speculum oculi*, and *speculum oris*, are for the same purpose, to inspect the eye or mouth with.

**SPEEDY-CUT**, a kind of cut which happens to a horse when put to his *speed*. See the article **SHOEING**.

**SPEISS**. During the fusion in making azure-blue, a substance separates which is only half vitrified, and precipitates under the glass: it is compounded of arsenic, of bismuth in grains, of regulus of cobalt also in grains, and of a certain portion of the ore itself, which has not been able to vitrify for want of having been duly calcined.

**SPELTA**, germen *spelta*, wheat-grass, a species of *Triticum*.

**SPELTER**, the same as **ZINC**, which see.

**SPERMA** (σπερμα.) See **SEMEN**.

**SPERMA CETI**, popularly called *parmasitty*. The ancients were great strangers to this drug; not well knowing whether to make it an animal or a mineral substance. It is now almost universally known that a particular sort of whale affords the oil whence this is made; and that it is very improperly called *sperma*, because it is only a species of fat found in the head, artificially purified, by boiling with alkaline ley, then poured into moulds, and the grosser or oleaginous parts strongly pressed out. This management is continued till it becomes of a snowy whiteness; it is afterwards broken into the flaky form in which it is found in the shops. *Sperma ceti* differs from the other animal fat, in not being dissoluble by alkalies, or combinable



with them into soap; and in rising almost totally in distillation, not in form of a fluid oil, but in that of a butyraceous matter, resembling, both in consistence and smell, the butter of wax. In long keeping, it is apt to turn yellow and rancid: the matter, very small in quantity, which has suffered this change, and which taints the rest, is found to have lost the discriminating characters of the sperma ceti, being dissoluble both by alkaline ley and by vinous spirits, so as to leave the remainder white and sweet as at first. This concrete long enjoyed an unmerited reputation as a pectoral remedy, but is now little used in human diseases, and is still less adapted to the maladies of the brute creation.

**SPERMATIC ARTERY** (from *sperma*, seed, and that from *σπείρω*, to sow). There is one in each given. Both these arteries rise from the aorta, but are not, as some assert, small at their origin and larger in their progress, nor do they anastomose with the spermatic veins. For the most part these arteries rise from the anterior part of the aorta, between the emulgent and the inferior mesenteric arteries; their course is obliquely downwards and outwards; they run upon the psoas muscle to the brim of the pelvis, and then through the aperture in the external oblique muscle; they run behind and contiguous to the peritonæum, and do not lie in the cavity of the belly. They are connected by the cellular membrane to each other, and to their corresponding veins, all which run in a serpentine manner, and form the spermatic chord.

**SPERMATIC CHORD.** It is composed of the spermatic artery and vein, of nerves, lymphatics, the vas deferens, the cremaster muscle, and aponeurotic membrane, derived from the opening of the external oblique muscle of the belly. These are all connected by the cellular membrane.

**SPERMATIC VEIN.** A little below the emulgent veins the vena cava sends out the right vena spermatica. The left spermatic vein commonly springs from the left emulgent vein, the reason of which is said to be the avoiding the aorta in its passage, by which the motion of the latter might be retarded. But this does not seem to be the cause, as the same caution is not observed with respect to the emulgent.

**SPERMATOCELE** (from *σπέρμα*, semen, and *κίλη*, a tumour); called also *epididymis distensa*. It is a morbid distension of the epididymis and vas deferens, produced by a stagnation of semen. This may be produced by tumours, stricture, or inflammation, about the caput gallinaginis, or in the course of the vas deferens; but there is reason to think that it is more frequently in-

duced by the last, viz. by inflammation, than by either of the other two.

When an inflammatory affection of the parts is discovered to be the cause of the disease, general and topical blood-letting, gentle laxatives, a low cooling diet, and rest, will commonly be found the most effectual remedies. And again, when tumours are discovered to press upon the vas deferens, they ought either to be brought to suppurate, or their extirpation should be attempted when that can be done with propriety. At other times these tumours are found to depend on a specific cause; and in such instances a well-directed course of medicine has been known to remove them.

On some occasions, it is said, that, all the other means having failed, castration has at last been found requisite. But this cannot be supposed to be a very necessary step in horses.

**SPHACELISMUS** (*σφακελισμός*), inflammation of the brain.

**SPHACELUS** (*σφακελος*, from *σφατίνω*, *interficio*, to kill), because it is looked upon to be a fatal sign, and is actually a mortification of the part affected. See MORTIFICATION.

**SPHACELUS OSSIS**, i. e. SPINA VENTOSA.

**SPHENOIDES OS**; called also *azygos*; the *sphenoid bone* (from *σφήν*, a wedge, and *ειδος*, *likeness*). It is also called *cuneiforme os*. It is an irregular bone which runs into the basis of the skull, from one temple to the other. Externally it hath five processes, which are all subdivided. The first and second are the two lateral apophyses, called *laterales processus*, the upper part of each of which is called the temporal process. That part of them which jets out towards the inside, lower than the temporal, and which makes up part of the orbit, is called the *orbital process*; the lowest and back part of these processes is called the spinous process. The two external processes which jet out nearly perpendicular to the base of the cranium, with each a fossa behind, are called the *pterygoid processes*. The azygous process is that sharp middle ridge which is in the base of the bone.

**SPHINCTER** (*σφιγγήρ*, from *σφιγγω*, *constringo*, to bind together), is ascribed to such muscles as draw up, and keep shut the parts; as the *Sphincter Vesicæ*, *Sphincter Labiorum* or *Orbicularis*, and *Sphincter Ani*. So likewise of other places having a muscle of the like formation. See Plate X. and article HORSE.

**SPIGELIA MARILANDICA**, Indian-pink. It is called *anthelmia* by Dr. Linning. A species of spigelia, the root of which the London college have introduced into their Pharmacopœia, is reckoned a good anthelmintic.

**SPIGELIA**, worm-grafs, a genus in Linnæus's botany. He enumerates two species.

**SPINA BIFIDA**, the same as *hydorachitis*.

**SPINA CERVINA**, the *Rhannus catharticus* LINN. The college have retained the berries of this tree in their Pharmacopœia; wherein syrupus spinæ cervinæ, is directed. See BUCKTHORN.

**SPINA VENTOSA**, is used for a caries, or rottenness of the bone. See **CARIES** and **BONE**.

**SPINALIS**, spinal, whatever belongs to the spine. Such are the following: 1. *Spinalis Colli*, a muscle which arises from the spines of the seven uppermost vertebræ of the back, and is inserted into the five lower vertebræ of the neck. 2. *Spinalis Dorsi Major*. 3. *Spinalis Dorsi Minor*. 4. *Spinalis Lumborum*. The two first are spinal muscles of the back; the last of the loins. See Plate X. and article **HORSE**.

**SPINATI MUSCULI**, are two muscles on the sides of the neck, arising from the five superior processes of the vertebræ of the thorax, and inferior of the neck; and in their ascent they become more fleshy, and are largely inserted into the inferior part of the vertebræ of the neck internally. They draw the neck backwards in the human subject; in brutes, upwards.

**SPINE**, or back-bone. See **VERTEBRÆ**.

**SPIRACULA**, are the same as pores, or any exuding passages.

**SPIRIT**, any fine volatile fluid which exhales from a body in a given degree of heat. In a pharmaceutical sense, however, this term is confined to those liquids that have considerable strength and pungency in their effects when applied to the living body. Of this class are *ether*, *alcohol*, or *spirits of wine*, the liquid preparations of *ammonia*, &c.; also some oils, as the *oil of turpentine*, have the name of spirits. By an imaginary analogy the term has been applied to the human body, in which we are taught to suppose the existence of a *nervous fluid*, or *animal spirits*.

**SPITHAMA**, a span, the sixth degree in the Linnæan scale for measuring the parts of plants: the distance between the extremity of the thumb and that of the first finger when extended; or seven Parisian inches.

**SPLANCHNICS**, such medicines as are supposed to cleanse the bowels and viscera.

**SPLANCHNOLOGY**, the science which treats of all the viscera in the head, breast, or belly.

**SPLEEN** (σπλήν). This viscus in the human subject is situated in the left hypochondrium,

under the diaphragm, between the ribs and the stomach, above the left kidney. It is tied to the peritonæum, to the midriff, and to the omentum. It is of a bluish or leaden colour, of an oblong figure, thick at the edges, and not thin, as the liver. It has two membranes. The external comes from the peritonæum. The internal membrane is finer and thinner than the external: for, if we blow into the splenic artery, the air will pass through the one, but not the other. Its fibres are not irregularly woven, as those of other membranes seem to be; but they come from innumerable points, as rays from so many centers, and the fibres of one point are regularly woven with the fibres of the points surrounding it. It receives veins, nerves, and arteries, from those that enter the spleen. The substance of the spleen is not only kept together by its two membranes, but also by innumerable fibres which come from the points of the internal membrane, and are inserted in the points of the opposite side of the same membrane: the expansion of the extremity of these fibres seems to compose the internal membrane. The spleen is composed of an infinity of membranes, which form little cells and cavities of different figures and bigness, which communicate with one another, and which are always full of blood. At the extremities of the blood-vessels in the spleens of sheep, we find several small, white, and soft specks, which Malpighi calls *glands*. The spleen has arteries from the coeliac, whose capillary branches make frequent inosculations upon the membranes of the cells. Its veins, whose extremities communicate with the cavities of cells, as they come out of the spleen, unite and make the ramus splenicus of the vena portæ, which carries the blood from the spleen to the liver. These, with its nerves, which are considerable, from the plexus splenicus, are equally distributed through the whole substance of the spleen, being all included in a common capsula. There are likewise a few lymphatic vessels, which arise from the spleen, and discharge themselves into the lumbar glands.

The spleen, being always full of a dark-coloured blood, was by the ancients thought to be the receptacle of the atrabilis, a humour nowhere to be found. The use of this viscus, in fact, has not yet been ascertained, nor has a variety of experiments made upon brute animals hitherto enlightened this obscure subject. The spleen has been removed in the dog without any seeming interruption in the functions of the other parts; and without any fatal or inconvenient effects, that could be observed, in the animal.



**SPLENALGIA**, pain in the spleen or its region.  
**SPLENICA**, medicines against diseases of the spleen.

**SPLENICA ARTERIA ET VENA**, the artery and vein of the spleen.

**SPLENII MUSCULI**, also, from their shape, called *triangulares*, are muscles that arise from the four upper spines of the vertebræ of the back, and from the two lower of the neck, and, ascending obliquely, adhere to the upper transverse processes of the vertebræ of the neck, and are inserted into the upper part of the occiput. They pull the head backwards to one side. For this muscle in the horse, see Plate XIX. and the description of parts in "the neck," under the article **MUSCLES**.

**SPLENITIS** (σπληνιτις), inflammation of the spleen.

**SPLENOCELE**, a rupture of the spleen.

**SPLINT**, or **SPLINT** (from *splenium*, a *ferula*), a thin scale of wood, pasteboard, or leather, of adequate shape and dimensions, which surgeons apply to the sides of a broken bone, to keep the ends in contact.

**SPLENTS**, in horses, are hard excrescences that grow on the shank bone, and are of various shapes and sizes. Some horses are more subject to splents than others. Young horses are most liable to them, but they often wear off and disappear of themselves. Few horses put out splents after they are seven or eight years old, unless they meet with blows or accidents.

A splent that arises in the middle of the shank-bone is no way dangerous; but those that arise on the back part of this bone, when they grow large, and press against the back-sinew, always cause lameness or stiffness, by rubbing against it: the others, except they are situated near the joints, seldom occasion lameness.

As to the cure of splents, the best way is not to meddle with them, unless they are so large as to disfigure a horse, or are so situated as to endanger his going lame. Splents in their infancy, and on their first appearance, should be well bathed with vinegar, or old verjuice, which, by strengthening the fibres, often put a stop to their growth: for the membrane covering the bone, and not the bone itself, is here thickened; and, in some constitutions, purging and some diuretic drinks will be a great means to remove the thickening and moisture about the limbs, which are often the forerunners of such excrescences.

Various are the remedies prescribed for this disorder; the usual way is to rub the splent with a round stick, or the handle of a hammer, and then to touch it with oil of origanum.

Others lay on a pitch plaster, with a little sublimate or arsenic, to destroy the substance. Some use oil of vitriol; some tincture of cantharides: all which methods have at times succeeded, only they are apt to leave a scar with the loss of hair. Those applications that are of a more caustic nature often do more hurt than good, especially when the splent is grown very hard. Mild blisters often repeated, as recommended in the case of a bone-spavin, should first be tried, as the most eligible method. These will generally succeed even beyond expectation; but if they fail, and the splent be near the knee or joint, apply the fire and blister, in the same manner as for the bone-spavin.

Splents on the back part of the shank-bone are difficult to cure, by reason of the back-sinews covering them: the practice is to bore the splent in several places with an iron, not very hot, and then to fire in the common way, not making the lines too deep, but very close together.

**SPLINTER**, a small fragment separated from a bone by some kind of violence, as shot from a gun. Gunshot wounds sometimes are rendered dangerous by splinters separated from the adjoining bone. See **WOUNDS**.

**SPODIUM** (σποδιον). The spodium of Dioscorides and of Galen are now not known in the shops. It is said to have been produced by burning cadmia alone in the furnaces; for having thrown it in small pieces into the fire, near the nozzle of the bellows, they blow the most fine and subtle parts against the roof of the furnace, and what was reflected from thence was called *spodium*. It differed from the pompholyx in not being so pure, and in being more heavy. Pliny distinguishes several kinds of it, as that of copper, silver, gold, and lead.

**SPONDYLUS** (σπονδυλος). Some have thought fit to call the spine or back-bone thus, from the shape and fitness of the vertebræ to move every way upon one another.

**SPONGE**, a substance no otherwise made use of, in veterinary practice, than to open abscesses and wounds that have a narrow orifice, which it does, by being cut into the form of a tent, and introduced dry; for as soon as it has imbibed the moisture from the part, it begins to swell, and is by degrees enlarged to its utmost capacity.

**SPONGOIDES** (σπογγοειδης, from σπγγος, a *sponge*, and ειδος, *forma*, *shape*); the same as *os cribriforme*, because it is hollow and porous like a sponge or sieve.

**SPRAIN**. See **STRAIN**.

**SPUMA**, strictly signifies froth of any kind:

whence some physical writers in a figurative sense apply it variously, either to the humours or excrements of an animal body, as they happen to partake of this quality.

**SPUNGE**, the extremity or point of a horse's shoe, that answers to the heel of his foot. Upon it the *calks* are made.

**SPUNK**, *Boletus*, a genus of the fungusses in Linnæus's botany. He enumerates twenty-one species. A species of this genus, viz. the *igniarius*, Linn. *Agaricus pedis equini facie*, Tournefort, has been used as a styptic applied after amputations in the human subject. Its effects are far more powerful however in brutes, from the less perfect structure of the latter.

**SPUR**, a small piece of iron, of two branches, bended in the form of a semicircle, for receiving the horseman's heel, with a rowel, that is, a small piece of iron with eight or ten points, advancing out behind, to prick the horse's side occasionally.

**SPURIOUS**, an epithet applied to such diseases as, in some symptoms, cannot be brought under any distinct head. These are also often called *bastard*, as *bastard pleurisy*, *bastard quinsy*, and the like.

**SPUTUM**, any thing brought up by spitting, different from the saliva, which only passes through those ducts that take their names from it. But from some resemblance to this the chemists will also have other things thus called, as litharge of silver or gold, called *sputum lunæ*, or *sputum solis*.

**SQUAMOUS SUTURE** (from *squama*, a scale), a future where the bones lie over one another like scales. See **SUTURE**.

**SQUARE**, in the manege, is used for working in a square. The piste or tread of a volt, instead of being always circular, and traced upon a circumference round a center, ought to be imagined as if it formed four straight equal lines laid in a square, and equally removed from the center, or the pillar, which represents it in the middle of the manege-ground; so that to work in a square, is to ride along each of these four lines, turning the hand at every corner, and so passing from one line to another.

**SQUILL**, the *Scilla maritima* LINN. This is a sort of onion, growing spontaneously upon dry sandy shores in Spain and the Levant, whence the root is annually brought into Europe. It should be chosen plump, sound, fresh, and full of a clammy juice. Some have preferred the red sort, others the white, though neither deserves the preference to the other; the only difference perceivable between them is that of the colour. This root is to the taste

very nauseous, intensely bitter and acrimonious: much handled, it exulcerates the skin. With regard to its medical virtues in the human subject, it powerfully stimulates the solids, and attenuates viscid juices, and by these qualities promotes expectoration, urine, and (if the patient be kept warm) sweat. If the dose be considerable, it proves emetic, and sometimes purgative. But should it be frequently repeated, it not only excites nausea, tormina, and violent vomiting; but it has been known to produce strangury, bloody urine, hypercatharsis, cardialgia, hæmorrhoids, convulsions, with fatal inflammation and gangrene of the stomach and bowels. Possessing these powers, it is not unreasonable to suppose it deserving of the notice of veterinarians; but no satisfactory trials of it have yet been made. On Gibson's authority we may state it as being serviceable to thick-winded horses.

**ST. ANTHONY'S FIRE**, a popular name for the erysipelas. See **ERYSIPELAS**.

**STABLE**. Nothing conduces more to the health of a horse, than the having a good and wholesome stable. The situation of a stable should always be in a good air, and on a firm, dry, and hard ground, that in winter the horse may come in and go out clean. It should always be built somewhat on an ascent, that the urine, and other foulnesses, may be easily conveyed away by means of drains or sinks cut for that purpose.

As there is no animal that delights more in cleanliness than the horse, or that more abominates bad smells, care should be taken that there be no hog-stye, hen-roost, or necessary-house, near the place where the stable is to be built; for the swallowing of feathers, which is very apt to happen when hen-roosts are near, often proves mortal to horses; and the steams of a bog-house, or hogs' dung, will cause many distempers. It is much better to build the walls of a stable with brick than of stone, for the former is always dry, the other often sweats, and is very apt to be moist, and to cause catarrhs to horses that are put into the stable in damp weather.

The walls ought therefore to be of brick, and to be made of a moderate thickness, two bricks, or a brick and a half at the least, both for the sake of safety and warmth in winter, and to keep off the heat of the sun in the midst of summer, which would spoil the horse's appetite, and sink his spirits. The windows should be made on the east and north sides of the building, that the north air may be let in to cool the stables in summer, and the rising sun all the year round,



not unworthy of our attention. He says it is by no means an uncommon case; and though seldom dangerous where there is no complication with some other disease, yet it sometimes proves fatal, when it happens not to be rightly understood. "And I have known," says he, "in some instances, the stomach and guts so extremely crammed, that it has scarcely been possible to administer any relief.

"These stoppages proceed from various causes, and only affect the head when they happen to be of some continuance: sometimes they are caused by full feeding, with the want of air and sufficient exercise, especially in hot dry weather, and in constitutions naturally hot; but most usually from the nature and qualities of their food, as bad hay, or any other bad provender, as rank clover, when it has imbibed moisture from the damp; which renders them so tough, that they lie like a wad, and distend the guts so as to impede their proper functions. Other things have also the same effect, as *foaling* horses with any kind of green herbage when it chances to be grown too old and tough, and has lost its succulency; especially when it has been cut too long before it is used. Any of these may cause stoppages in the first passages, and sometimes excite such disorders as by their continuance affect the head in a very sensible manner.

"When the staggers and convulsive symptoms arise from such causes, the horse generally looks dull about the head, with his eyes swollen; is feeble, reels and totters as he moves; his mouth is generally stiff, but not quite shut up; he is short-breathed upon the least motion, and, for the most part, has a short cough, because the fulness of the intestines press continually upwards on the lungs, and thereby interrupts respiration; and, as a consequence of this, the motion of the flanks becomes irregular, though seldom violent. For the same reason, he scarce ever lies down till some relief is afforded him, because the extreme fulness of the abdomen causes great uneasiness whenever he offers to bend his body, inasmuch that many, when they see a horse in this condition, are apt to imagine he has received some hurt in his back or loins. Other signs are costiveness; for he is apt to strain much when he goes to dung, and has many fruitless motions: he stales but little, and that of a dark colour, which often proceeds from the obstructions the gall meets with in its passage from the liver into the duodenum; and thence the jaundice sometimes ensues.

"In order to the cure, let some person that has a small hand rake the horse thoroughly, and bring out the dung from the rectum, which is generally hard, and made up of little small balls, of a blackish colour, and quite dry, without moisture. After this let him have plenty of emollient oily glysters, made of mallows, marsh-mallows, and such like; but in places where these cannot be readily got, they may be made of pot liquor, water-gruel, or water. To three pints or two quarts of the liquor may be added a pint of linseed oil, and half a pound of treacle. This should be given milk-warm, and repeated every day, at least till his dung comes away with ease, and grows soft. His diet should be the best hay, scalded bran, scalded chaff, or boiled barley, till he has been thoroughly emptied, and for some time afterwards. At first the dung that comes away with the glysters will be in small hard balls, and sometimes along with it a putrid slime, which when once discharged gives great relief; but by the continuance of the glysters, and the open diet, the dung soon alters, and comes away in such great loads, that one would scarce imagine it could pass through the fundament; but as soon as this happens it brings sure relief, and a way is made for gentle lenitive purges, which in this case are always the most successful.

Take Lenitive electuary,

Cream of tartar, of each four ounces;  
Brown sugar, two ounces.

Mix them in a pint and a half of ale; the ale to be made hot, that the cream of tartar may be the more easily dissolved in it; after that the sugar, and last of all the lenitive electuary.

This being given in the morning, upon an empty stomach, blood-warm, will probably begin to work before night; and it seldom makes a horse sick, as the stronger purges are apt to do when he is full and costive; so that he will drink warm water, or warm gruel, without reluctance. It may be repeated three or four times, allowing always two or three days respite between each draught, keeping him to an open diet, with proper exercise, till he recovers his usual vigour."

Gibson states, that by this method several horses had been cured that were very much affected with convulsive symptoms; and the event plainly shewed that this affection was owing to a stoppage of the alimentary functions. Of this he mentions one instance of

"a horse that was sent home from Hounslow-heath, when the troops were encamped there. He was so much convulsed, that he could neither eat his hay nor corn, and his neck so stiff that he could not reach to drink. The man that led him was forced to stop almost every hundred yards, because of the stiffness of his limbs, and the shortness of his breath, by the shutting up of his mouth. However, when examined, he did not appear to be near so much convulsed as those that have worms in the stomach or intestines, or imposthumations in the viscera. By working his mouth it might be opened a little way, neither were his limbs so stiff, nor so much contracted. It was evident he was very costive, for he often made motions to dung, but could not part with more than two or three little small hard black balls, which shewed the necessity of opening oily glysters. He had two every day at first, which brought him to dung pretty freely, and soon recovered the use of his jaws, so as to eat hay and scalded bran. After this he had opening drinks administered to him; and the dung he voided in a course of mild purgation was in vast loads, and must have lain a considerable time pent up within him, being not unlike what we see rotting in a dunghill, both in smell, colour, and consistence; and when this load was once discharged, he soon recovered, and without the help of other means."

We shall conclude with a very extraordinary case of this nature, from the same experienced writer, that proved mortal. "It was of a horse belonging to the second troop of grenadiers, at grass, about three miles from town, along with some others of the same troop. He was observed to lag behind his companions, by himself, for several days, which always denotes indisposition; for a horse that is in health, though he may sometimes stray by himself, will not continue long from his company. But this was not much observed by the guard who looked after the horses, till he was scarcely able to move at all, otherwise his death might probably have been prevented. He was so extremely oppressed, that several men had much ado to get him to town, and were obliged to support him all the way to keep him from falling. His eyes were so set in his head, that he took not the least notice of any thing that came near him, but appeared the same as if he had been already dead, and with every motion he reeled and bore forwards, ready to tumble on his nose, if he had not been held up. His legs were stretched out and stiff, without the least use of his joints, and by their coldness shewed

the blood to be altogether stagnated in those parts. So that, in a few hours after his coming to the troop stables, he dropped down dead without the least struggle."

"I was greatly surpris'd," says Gibson, "when I saw this horse opened, to find his stomach and all his guts, both large and small, filled and crammed to such a degree, that it would have been impossible, by any means whatever, to have procured the least vent. For all the aliment that was in his stomach, and the dung in the intestinal tube, from one end to the other, was entirely dry, and without moisture; and before they were laid open appeared as hard and full crammed as a Bologna sausage, without the least yielding or softness in any part. The matter contained in them was no less extraordinary; the stomach being filled with acorns, fives, oak-leaves, and such other things as he could pick up about the hedges, some green and some withered; for it was now towards the latter part of the year. The contents of the guts were chiefly leaves, neither well chewed nor digested, with a mixture of grass; but there was little or no grass in his stomach, but chiefly acorn cups and leaves, which was distended to its utmost extent, so as to keep the muscles at their full stretch; by which their action, which is necessary in digestion, was altogether at a stand."

"This horse, it seems, had been put upon a very rank after-math. Here he had been so surfeited that he came to loath his grass, and, his appetite being depraved, he had taken to those things that were acrid and sour to the taste, which greatly aggravated his disorder by their restraining quality. The contents, both of his stomach and guts, when rubbed between the hands, crumbled like dung dried in the sun, without the least drop of moisture or any ill flavour; for there was no room for air to be pent up in them, wherein is the stench, chiefly, that occurs in opening the intestines of dead animals; and indeed, it was somewhat extraordinary that he lived to come to this extremity, where the muscular action of the stomach, and the peristaltic motion of the bowels, by which the expulsion of the excrements is forwarded, must in all probability have been lost for several days. There seemed to be no other reason for his holding out so long, but that he was in all respects extremely sound, and little else was to be seen but a beginning inflammation in some of the internal parts; which, considering how unmercifully he was crammed, could not but be the case."

"We meet with some instances among men



of voracious appetites that have died suddenly after an excessive meal, by filling their stomachs to such a degree, that the strongest emetics could have no effect upon them. But these instances in men are not very frequent; for if a man's stomach is not filled too suddenly to its full extent (which has sometimes happened to those who have brutishly eat for a wager) he will go nigh to vomit of himself, and so get rid of his enemy. But an excessive fullness of the stomach and guts must always create great disorder in a horse, that has no natural power to vomit; so that all possible means must be used to preserve the passages downwards free and open, according to the method above prescribed, viz. by glysters, lenitive purges, and an opening diet, that being all the chance he can have for his life in such circumstances."

STAGMA, a liquor exposed to distillation; also a name for the vitriolic acid.

STALING, a term used to signify, in a horse or mare, the act of evacuating the urinary bladder. It is a humane and necessary practice to suffer horses to void their urine at full leisure; and to encourage them to it by *whistling*, or any other of the soothing methods which they may understand. The evacuation of urine is liable to interruption from various causes. See the articles BLADDER, KIDNEYS, URINE, &c.

Horses are seldom subject to *stale blood*, unless when they have received some strain in the kidneys, or when some blood-vessel has been ruptured about the neck of the bladder, or from some erosion either there or in the urethra, by which some of the small blood-vessels may have been laid open and send forth a bloody discharge; but when this happens, it is generally very small in quantity, and often goes off without the help of medicine. These effects may also proceed from sharp rugged stones in the kidneys, ureters, or about the neck of the bladder; though from what authors have hitherto observed on the subject, horses are not very frequently so affected from this cause, but, for the most part, in consequence of very hard labour or some other ill usage.

In this case the urine becomes bloody, and sometimes even clear blood will pass off just after staling. In order to a cure, if the horse be fat and lusty, it will be proper to bleed plentifully, but if he be low in flesh, more sparingly, or not at all. It has been the practice to follow this by the internal use of mild astringents, such as the following, from Gibson:

Take Conserve of red roses,  
Locatelli's balsam, of each six drachms;  
Spernia ceti, half an ounce;  
Nitre, in powder,  
Irish slate, of each two drachms;  
Syrup of poppies, sufficient to make it  
into a ball.

This, he says, generally cures any horse that stales blood, while the disorder is recent, and when the blood does not proceed from some inward ulceration. It may be repeated until the symptoms go off and the horse stales freely. If the bloodiness of the urine proceed from an affection of the kidneys, neck of the bladder or urethra, which may be known by pain and interruption in staling, and by a purulent sediment in the urine, it must be treated as under those heads, and, if obstinate, with mercurials and such other medicines as may be required.

"The most remarkable case I ever met with of this kind," says Gibson, "was that of a troop horse, that happened to be overstrained in riding, perhaps at a time when his bladder was full and wanting to stale. When he came home I found him much out of order, drooping, hanging his head, and off his stomach, and after staling voiding sometimes about a gill, sometimes about half a pint or more, of fresh blood, which I saw several times lie clotted on the pavement or among his litter. This horse was treated with rowelling, bleeding, and the use of the last-mentioned prescription, which soon relieved him, and was repeated till all the symptoms were removed. After which some mild purges were exhibited, whereby he was enabled to do his work as usual. Yet after two years, upon some other occasion, the same symptoms returned, but not so violent, and were soon cured with the use of the same remedies."

Modern veterinarians will not be inclined to attribute much of the credit of the cure, in the cases here cited, to the balls prescribed by Gibson. Bleeding, rest, and the use of diluents, were probably the actual causes of restoration. If any thing would have contributed to the further success of this plan, it is perhaps the free use of mucilaginous solutions, as those of gum arabic, &c. as in the strangury. See STRANGURY.

STALLION, an ungeld or stone-horse, designed for the covering of mares, in order to propagate the species. See BREEDING.

STAMINA, in the animal body, are defined to be those simple original parts, which existed first in the embryo, or even in the seed, and by

whose distinction, augmentation, and accretion, by additional juices, the animal body, at its utmost bulk, is supposed to be formed.

**STANNUM**, tin, a silver-coloured metal, not liable to rust, but losing its brightness in the air, the softest metal next to lead, easily flexible, little more than seven times heavier than water, fusible in a heat far below ignition, and somewhat less than that in which lead melts. The principal use of this metal in the present practice is as an anthelmintic. The college have retained tin in their Pharmacopœia; the reducing it to powder by means of fusion is therein directed. This preparation is called *stannum pulveratum*.

**STAPEDIS MUSCULUS** (from *stapes*). It lies in a little cavity of the os petrosum, and is inserted into the head of the stapes.

**STAPES**, the *stirrup* (in quo pes stat.) It is one of the bones in the ear, and is thus named because it is exactly like a stirrup. It stands with its basis upwards and inwards upon the fenestra ovalis, and at its narrower part is articulated with the inside of the long process of the incus. See **EAR**.

**STAPHISAGRIA** (from *σταφίς αγρία*, wild vine, from its leaves resembling the wild vine); called also *pedicularis*, *pedicularia*; *aconitum urens ricini fere foliis, flore cœruleo magno*. Stavesacre, lousewort, or palmated larkspur. It is the *Delphinium staphisagria, nectariis tetraphyllis petalo brevioribus, foliis palmatis; lobis obtusis*, LINN. a plant with large leaves, and blue flowers, which are followed by pods containing large, rough, triangular, dark-coloured seeds. It is a native of the south parts of Europe, from whence the seeds are brought to us, but they are most plentiful in Dalmatia and Istria. The seeds have a disagreeable smell, a nauseous, bitter, burning taste. If taken in doses from ten grains to a scruple, they purge and vomit a man, and inflame the throat and stomach; but they are chiefly used to destroy lice. Their acrimony is partially extracted by water, totally by rectified spirit, but not raised by either in distillation. Decoctions of this have been used for curing the itch. The best method of using them for destroying lice, &c. is to strew the fine powder on the part, and to secure it with a handkerchief, or other proper bandage; or if a decoction is more convenient, boil an ounce in a pint of water for a few minutes. The powder may be mixed with oatmeal to kill mice and rats.

**STAPHYLINI** (from *σταφυλή*, the uvula). Winslow calls by the names *staphylini* and *epistaphylini* two fleshy ropes closely united toge-

ther, as if they were but one muscle; but in some subjects they are distinguished by a very fine white line. They are fixed by one extremity in the common point of the posterior edges of the ossa palati, and from thence they run downwards and backwards along the middle of the septum, and also along the middle of almost the whole uvula. Morgagni discovered them, and they are called by some *azygos Morgagni*.

**STAPHYLOMA** (*σταφυλωμα*), a disease of the eye, consisting of a watery cyst, from a dilatation of the cornea, or from an hernia of the uvea of the eye, through the foramen of the cornea.

**STARING COAT**, or **HIDEBOUND**. See the article **HIDEBOUND**.

**STARLING-COLOUR** of a horse. See the article **COLOUR**.

**STARS**, are distinguishing marks in the foreheads of horses. They are usually white. See the article **MARKS** of a horse. Solleysel says, the *method of making a star* is as follows: "if you would have a white one in his forehead, or indeed in any other part of his body, first, with a razor, shave away the hair, of the width or bigness that you would have the star to be; then take a little oil of vitriol in an oyster-shell, and dip a feather or piece of stick into it, for it will eat both linen and woollen, and just wet it all over the place that you have shaved, and it will eat away the roots of the hairs, and the next that come will be white. It need not be done above once, and may be healed up with green ointment."

**STARTING**. A horse is said to start that is skittish, or timorous and that takes every object he sees to be otherwise than it is. He stops, flies out, and runs suddenly to one side, insomuch that the rider cannot make him approach the place where the object is. This fault frequently arises from bad treatment, but it is more common to geldings than stone-horses. Such horses also as have had bad eyes are particularly subject to it, as well as those that have been kept a long time in a stable without airing; but these last are easily cured of it. A skittish horse should never be beaten in his terror, but made to advance gently and with soothing means, to the object that alarms him, till he recovers and gains confidence.

**STATELY**, in the manege. A horse is said to be *stately* that goes with a proud or strutting gait.

**STAVERS**, **STAGGERS**, or **APOPLEXY**. See the articles **APOPLEXY** and **STAGGERS**.

**STAVESACRE**. See **STAPHISAGRIA**.

**STAY**. To stay the hand, in the manege,



to stay or sustain a horse, is to hold the bridle firm and high.

**STEATITES**, soap-rock; a genus of the earths: it is glossy, very smooth, unctuous, and resembling hard soap, readily falling down in water, when it possesses no kind of ductility, nor any grittiness.

**STEATOCELE** (στεατοκηλη), a species of *hernia* caused by a collection of suety matter in the scrotum, derived from στεαρ, *suet*, and κηλη, *an hernia*.

**STEATOMA** (στεατωμα, from στεαρ, *sebum*, *suet*), is a swelling, consisting of a matter much like suet, soft, without pain, contained in a cyst, and easily turned out upon incision.

**STEEL**. Preparations of iron have heretofore been used under the appellation of *steel* medicines. Thus we had *salt of steel*, *prepared steel*, &c. but the properties of steel are in no respect different from common iron.

**STEGNOSIS** (στεγνωσις, from στεγω, *conspiro, to fix, or harden*), an obstruction of the pores; and

**STEGNOTICS** (στεγνωτικά), are therefore the same as astringents.

**STEP**, in the manege. See the article **WALK**. The *step* and *leap* is one of the seven airs, or artificial motions, of a horse.

**STERILITAS**, barrenness. It is synonymous with dyspermatismus; arises from various causes, and is as variously to be remedied according to the influence of such causes.

**STERNO-CLEIDO HYOIDÆUS**. This and the following terms are derived from *sternum*, and the places of their insertion. See **STERNO-HYOIDES**.

**STERNO-COSTALES**; i. e. the *triangulares sterni*.

**STERNO-HYOIDES**. This muscle rises from the inside of the sternum and the clavicle, and, running over the thyroid cartilage, is inserted into the base of the os hyoides to pull it down. Some call it *sterno-mastoidæus*, but very improperly; also *sterno-hyoidæus*.

**STERNO-MASTOIDÆUS**, or **STERNO-MASTOIDES**. See **MASTOIDÆUS**, and **STERNO-HYOIDES**.

**STERNO-THYROIDÆI**. The muscles thus named rise between the cartilages of the first and second rib; run before and close to the thyroid gland and the trachea; and are inserted into the knobs of the thyroid cartilage, pulling the whole larynx down. See **Plates X. XIV. and XV.** and their descriptions under **HORSE**.

**STERNUM** (στερνον), the breast-bone, is situated in the middle of the breast. It is composed of seven or eight bones, which, in young

animals, are cartilaginous, but afterwards harden and unite into three bones. The substance of these bones is not solid, but somewhat spongy. The first and uppermost is the largest. It is uneven and rough on its outside, but smoother on its inside, where it has a shallow furrow. In the human subject, it has a sinus lined with cartilage on each side of its upper end, wherein it receives the heads of the claviculæ. The second is longer and narrower than the first, and on its sides there are several sinuses, in which the cartilaginous ends of the ribs are received. The third is shorter, but broader than the second. It receives into the lateral sinuses the extremities of the last true ribs. It terminates in a cartilage, which hardens sometimes into a bone, called *cartilago xiphoides* or *ensiformis*, because it is broad at its upper end, where it joins the third bone, and grows narrower to its extremity, where it is sometimes forked. The use of the sternum is to defend the heart, and to receive the extremities of the true ribs.

**STERNUTATION**, sneezing, is a convulsive shaking of the nerves and muscles, first occasioned by an irritation of those in the nostrils: hence

**STERNUTATORIES**, are medicines which procure sneezing.

**STERTOR**, noisy respiration, as in an apoplexy, in which the mucus from the fauces is forced through the nostrils: or snoring, snorting, or the noise made through the nose in sleep.

**STIAN**, also called *critbe*, *hordeolum*, *stye*, and *barley-corn*. It is a species of abscess, and is usually on the edge of one of the eye-lids. Dr. Cullen places it as a variety of the *phlogosis phlegmone*.

**STIBIATED TARTAR**, i. e. *Tartarised Antimony*.

**STIBIUM**, is an ancient name for antimony, but now seldom used.

**STIFFLE**, the patella or knee-pan in a horse. See **BONES**. A lameness in the stifle is caused by those accidents that produce it in all other joints. When a horse is lame in this part he generally treads upon his toe, and cannot set that heel to the ground. Some strains in the stifle are violent and swell pretty much, but Gibson asserts, that he hardly ever knew any of them incurable, unless bad methods had been used in the beginning. They commonly may be cured by cooling applications, such as have been prescribed for the shoulder strains (see **STRAIN**); but if the swelling be very large and puffy, which sometimes happens, recourse must be had to fomentations to take off inflammation. Sometimes, however, imposthumations follow

in such cases, and when these break and run, there is commonly an end of all danger.

"I was once concerned," says Gibson, "with a horse that had a swelling in his stifle, occasioned by so violent a strain, that he was not able to touch the ground with his foot for above six weeks. This horse was cured with the constant use of fomentations, made with crude sal armoniac and potashes. It never suppurated in any part, but came down gradually; though the anguish had been so great, that, for six months after he was completely cured, if any person went on that side of him, he held up his leg, and would not put it to the ground till every one was out of sight."

**STILLICIDIUM**, signifies an instillation of liquor upon some part of the body. The French call it *la douche*, and we commonly express it by pumping upon. *Stillicidium Urine* is the same as **DYSURIA**.

**STIMULATE**, is a property in angular or sharp bodies, whereby they cause vibrations and inflections of the fibres, and a greater derivation of blood into the part affected.

**STIMULI**, stings, a species of armature growing upon some plants for their defence, as in nettles, &c. Many of our topical applications act as stimuli.

**STIPA**, feather-grass, a genus in Linnæus's botany. He enumerates nine species.

**STIRRUP**, a well-known iron frame, hung to a saddle by a strap of leather, for the rider to rest his foot on. For military exercises, you should keep the right stirrup half a point shorter than the left, for in combat the horseman bears more upon the right; and, to facilitate the mounting of your horse, the left stirrup should be longer than the other.

**STOCKING**, a cruel folly prevalent among cow-jobbers. In *stocking the cows*, as it is called, they oblige these creatures to suffer the pains of retention, twenty-four or perhaps forty-eight hours, previous to sale, that they may have a great *shew of milk* in the udder. All buyers of cows however, that know any thing of cattle, are aware of the custom, and of consequence avoid the deception. "The plea that any knowledge of the animal can be thence obtained," says Mr. Lawrence, "is ridiculous; for there are other rules of judging infinitely more certain, familiar to every experienced man. Many cows get inflamed and even indurated udders from this practice, from which they never perfectly recover."

**STOMACH**. This part in a horse is round and somewhat long, resembling a bagpipe, but more capacious on the left side than on the

right. Its magnitude is, generally speaking, more or less, according to the size of the horse. It is composed of three coats, the outermost of which is the peritonæum; the second is muscular and fleshy; and the last a continuation of the innermost coat of the œsophagus or gullet, which passes from the mouth to the stomach, and begins at the root of the tongue, behind the head of the windpipe. Where it is inserted into the stomach it is composed of a pretty thick substance, made up of circular and fleshy fibres, by which it contracts and dilates. This is called the left or upper orifice of the stomach; and that whereby it discharges itself into the duodenum is its right or lower orifice.

In the stomach of the horse there is a pretty large portion which is insensible, in consequence of a cuticular covering, and differs, of course, from the villous portion of that viscus. This insensibility prevents irritation from hard food. The œsophagus is always, unless at the time of deglutition, drawn into longitudinal folds. This proves a barrier to any retrograde motion of the food, and which also *precludes the possibility of his vomiting*, from its acting as a valve against any substance that might be rejected by the stomach. Vomiting in this animal would be fatal, as, from the structure of the superior portion of the pharynx, food would in this case be introduced into the trachea. That part of the stomach not lined by cuticular membrane is extremely vascular. It is situated posteriorly, and is of the utmost importance to the animal economy. The *gastrica dexter* and *sinister* are continued to this membrane. Its surface is glandular, and secretes the gastric juice. This juice promotes digestion, will act on almost all bodies, and has the power of reducing various substances into the same uniform mass. From the effects of the gastric juice, chyle is formed and carried from the intestines. This chyle has no resemblance to the matter from which it has been generated, but is the same from whatever species of food it is produced.

The *gastric juice* coagulates milk. Milk undergoes this process in the stomach before it can be digested; yet the gastric juice has no effect on living animal substance. Its secreting vessels are not irritated by it, nor is the stomach itself. In the stomachs of horses are frequently found animals called *botts*. They are very firmly attached to the cuticle of the stomach, or the insensible part, by two hooks situated near the tail. In this situation of the *botts* the horse experiences no obvious inconvenience, but that of being deprived of some portion of his nourishment for the subsistence of the *botts*. These



animals appear insensible of pain, as no stimulus whatever will compel them to quit their hold. Indeed, were it in our power, it would be imprudent to kill them, unless we could at the same time destroy their adherence. Horses of every description are liable to botts. At a certain unknown period the botts quit their hold, and now become somewhat dangerous. They are carried by the peristaltic motion through the intestines, and are apt to inflame their coats. Botts sometimes exist in their insensible state in the intestine, with an adherence similar to that of the stomach. Some say botts may be removed from their attachments by distension. Sweet wort, or molasses, have been given them, when they were supposed to fill themselves so completely as to lose their former powers, and to fall off from debility. Their whole internal cavity is a stomach. When they exist in the intestines they are sensible, and purgatives will remove them, by increasing the peristaltic motion.

The stomach of the horse is liable to inflammation, yet not so much so, perhaps, as that of the human. In this case the horse is in extreme pain, the pulse is hard, the patient thirsty, he lies down, and points constantly with his head to the affected part. Large quantities of either solids or fluids are very injurious; the stomach should be kept as much as possible in a state of inaction. The external surface must be stimulated by rowels, blisters, or the actual cautery. Large bleedings from extensive orifices should be employed, and the skin warmly clothed.

Sheep and oxen are liable to a distension of the paunch, from taking in too large a quantity of food. If not soon relieved, death ensues. Fermentation takes place, and a considerable quantity of air is generated, which materially increases the disease. As a mode of cure, the paunch has been pierced below the ribs on the left side; air then rushes out, and the muscular power of the paunch is generally restored. Sometimes, however, food insinuates itself through this orifice into the cavity of the abdomen: this proves fatal. Dr. Monro once proposed the introduction of a tube into the stomach in this disease; this method however has several inconveniences. A common piece of cane is now employed, which, being oiled and covered at its end so as to produce no irritation, is thrust into the paunch through the œsophagus, and the food with the air is suddenly and violently discharged.

We have said that the stomach of the horse is less liable to disease than that of the human subject. The stomach in man is affected by sympathy, from complaints in other parts;

while the horse is seldom liable to this affection. Even in the agony of death horses will sometimes eat. This may perhaps arise from so small a portion of the stomach being vascular and endued with sensibility, and also from secreting so little gastric juice. It is not an easy matter to produce nausea in the horse. Hellebore and aconitum in the quantity of half a drachm will bring on efforts to vomit. A full inspiration takes place, the mouth is thrown open, and sometimes a small portion of the contents of the stomach may be thrown a little way up the œsophagus. Four ounces of antim. tart. have been given without exciting nausea. Cerussa acet. to the amount of half a pound has been administered without any perceptible consequences; the same trial has been made with aq. litharg. acet. in a proportionate degree. They have not their usual sedative power in these instances. Jalap and colocynth have been given in large doses without any obvious consequences. Corrosive sublimate has been also given from fourteen grains to three drachms and a half. From this quantity inflammation took place in the stomach, and coagulable lymph was thrown out. Calomel purges, irritates the superior part of the pharynx and the mouth, but does not salivate. There is much danger from a large administration of it. Opium has no particular power on the horse; four ounces have been given, and have caused pain and inflammation in the stomach: but it has no apparent influence over the nervous system, nor does it alleviate pain. It has some astringent power. Tobacco in every form has been employed, even an infusion of three pounds have been introduced into the stomach without effect. Vitriolated zinc acts as a tonic when used in moderate quantities; half an ounce has been administered with great benefit, but it is necessary to begin with small doses.

The lacteals take up a fluid called chyle, and convey it through the lymphatic glands, where it seems to undergo some change, into the thoracic duct; from thence they proceed in horses to the left jugular vein, but in the human, to the left subclavian. This process renews the blood after its various losses. It has been doubted whether the absorbents work up chyle by capillary attraction or by voluntary will. But the absorbents seem to have their own peculiar stimuli. This however belongs to another head.

The stomach is an organ whose functions it is of the last importance that the veterinary practitioner should well understand. We are glad therefore to communicate the foregoing

hints, which form a part of Mr. Professor Coleman's lectures at the college. Further experiments are, however, wanting, to ascertain the facts above, as we have had occasion to observe in various parts of this work.

For the diseases of the stomach, see the articles APPETITE, BOTTS, &c.

STOMACHICS, are such medicines as are serviceable to the stomach.

STONE IN THE BLADDER. See the articles CALCULUS, INTESTINAL, and BLADDER.

STONES OF A HORSE. See the article TESTICLES.

STOP, in the manege, a pause, or discontinuation of going. In order to stop a horse, the rider should, in the first place, bring-to the calves of his legs; and bending his body backwards, raise the bridle-hand, without moving the elbow; then vigorously extend the hams, and rest upon the stirrups, to make him form the times or motions of his stop, in falcading, with his haunches, three or four times. The opposite term to *stop* is *parting*. Formerly the stop of a horse was called *parade*.

STOPPING, the filling the hollow of a horse's foot with poultice, cow-dung, or any other moist application. It has the effect of softening the sole, and, on some occasions, may be advantageous, though it is frequently misapplied.

STORAX. See STYRAX.

STRABISMUS (*στραβισμος*), a distortion of the eyes, whereby their pupils are turned from, instead of being directed towards, objects at which they look; commonly called *squinting*: sometimes only one eye, but more frequently both are thus affected.

STRAIGHT, in the manege. To part or go straight, or right out, is to go upon a tread in a straight line.

STRAIN, or SPRAIN, in whatever part of a horse, is a distension of the muscles, and proceeds from either slips or blows, or from hard riding.

It is necessary to observe, that, in all strains, the muscular or tendinous fibres are over-stretched, and sometimes ruptured or broken. To form a true idea of these disorders, let us first consider every muscle and tendon as composed of elastic fibres, which have a proper power of their own, to contract and extend themselves; and that this function has been forcibly impaired.

In all violent strains of either tendon or muscles, whatever opinion we may entertain of bathing and anointing with favourite nostrums,

which often succeed in slight cases, where perhaps bandage alone would have done; yet it is the latter, with proper resting the relaxed fibres till they have thoroughly recovered their tone, that are the chief things to be depended on; and frequently some months are necessary for effecting the cure.

All violent strains of the ligaments, which connect the bones together, especially those of the thigh, require time, and turning out to grass, to perfect a recovery. External applications can avail but little here; the parts affected lying too deep, and so surrounded with muscles that medicine cannot penetrate to them. The sooner in these cases the horse is turned out to grass, the better, as the gentle motion in the field will prevent the ligaments from thickening, and of course the joint itself from growing stiff; nor do we believe that firing, so commonly practised in this case, is of half the consequence as rest, and turning out for a considerable time, which, by the bye, is always advised at the time the horse is fired.

When a horse's shoulder is over-strained, he does not put out the leg as the other; but, to prevent pain, sets the sound foot hardly on the ground, to save the other; even though he be turned short on the lame side, which motion tries him the most of any. When trotted in hand, instead of pulling his leg forwards in a right line, he forms a circle with the lame leg; and when he stands in the stable, that leg is advanced before the other. In order to cure this lameness, first bleed him, and let the whole shoulder be well bathed three times a-day with hot verjuice, or vinegar: but if the lameness continue without swelling or inflammation, after resting two or three days, Bartlet orders the muscles to be well rubbed for a considerable time with opodeldoc, or either of the following mixtures.

Take of Camphorated spirit of wine, two ounces;

Oil of turpentine, one ounce. Mix.

This proportion will prevent the hair coming off.

Or,

Take of the best vinegar, half a pint;

Spirit of vitriol,

Camphorated spirit of wine, of each two ounces. Mix.

When the shoulder is very much swelled, it should be fomented with woollen cloths (large



enough to cover the whole) wrung out of hot verjuice.

A rowel in the point of the shoulder in this case does great service, especially if the strain has been very violent, and the swelling very large: but as to *boring up the shoulder* with a hot iron, and afterwards inflating it, it is both a cruel and absurd treatment; and the pegging up the sound foot, or setting on a *patten-shoe*, to bring the lame shoulder on a stretch, is a most preposterous practice, and directly calculated to render a horse incurably lame; for it can only be necessary in cases the very opposite to this, where the muscles have been long contracted, and we want to stretch them out. When the parts are in a state of inflammation, *i. e.* when the accident is recent, poultices, if they can be applied, are very effectual, after bathing with hot vinegar, or verjuice. These are to be preferred greatly to *cold charges*, which, by drying soon on the part, keep it stiff and uneasy. Let them be prepared with linseed or oatmeal, rye-flour, or bran, boiled up in vinegar, strong beer, or red-wine lees, with just lard enough to prevent their growing stiff. When, by these means, the inflammation and swelling are brought down, we may bathe the part twice a-day with either of the above mixtures, opodeldoc, or camphorated spirits of wine; and roll the part three or four inches both above and below with a strong linen roller, of about two fingers width, which will contribute not a little to the recovery, by bringing up the relaxed parts; and perhaps that strengthening is more to be depended on than the applications themselves.

In strains of the coffin-joint, that have not been discovered in time, there will occur such a stiffness in the joint, that the horse will only touch the ground with his toe, and the joint cannot be played with the hand. The only method here is repeated blistering, and then firing superficially.

For strains in the back-sinew (see BACK-SINEW), the knee, and fetlock, Mr. Denny says, "Take away three or four pints of blood from the plate vein; and for the first three or four days the only necessary application is a cold Goulard poultice, sufficiently large to cover the limb from the knee to the hoof. This may be secured by a fillet attached to the bag, and passing over the shoulder. Goulard's water may be frequently added to the poultice. Or, instead of the poultice, a flannel roller may be applied around the leg, and kept constantly moistened with the following embrocation:

Take of Crude sal ammoniac, two ounces;  
Common vinegar, one pint;  
Water, two quarts;  
Extract of lead, two ounces.  
Mix them.

"When the inflammation is removed," he says, "the parts may be strengthened with camphorated embrocation. Walking exercise should be allowed, and increased as the animal recovers. And should any swelling remain, after the lameness is removed, the cure may be completed by applying a mild blister, and repeating it, if necessary.

"Strains of the hinder extremities are, of course, to be treated in the same manner."

**STRANGLES.** The French and other foreign writers have compared the strangles in horses to the small-pox in men; and as the small-pox is more incident to children than to grown persons, so it has been observed by these writers, that the strangles chiefly affects colts and young horses, when they catch inveterate colds; which is very true, for horses are seldom subject to the strangles after six years old, though Gibson speaks of some horses that he knew to have had this distemper at seven and eight, and sometimes at nine or ten, though these instances, he says, are not very common. The strangles is also said to resemble the small-pox in this, that it never seizes horses oftener than once; whereas many other distempers, proceeding from common causes and accidents, will return as often as there are the proper causes to produce them. But however that be, it is probable that the strangles is a critical swelling, which, when it suppurates and breaks, discharges somewhat obnoxious to the constitutions of young horses, as they are usually rendered more healthful than they were before.

The strangles begins with a swelling between the jaw-bones, sometimes pretty low among the muscles of the tongue, attended with great heat, pain, and inflammation, sometimes to such a degree, that a horse is scarcely able to swallow till the tumour suppurates.

Many colts have the strangles at grafts, and the tumour comes to maturity and breaks, yielding a very plentiful discharge, without any other help than what nature affords; though in some cases there is very great malignity, with a purulent running at the nose, which is often dangerous. Those colts, however, that escape the strangles at grafts, are liable, for the most part, to be seized when they are first taken up and put to business; and we often observe

the change of diet, an alteration in the air, &c. bring on the strangles. Other causes may be, their catching cold, shedding their teeth, or whatever may induce pain, or bring on irritation at any critical time upon the throat and jaws.

When the strangles are coming upon a horse, he feels unusually hot, and sometimes very feverish, with a painful cough; some go quite off their stomachs, others are only dainty, or eat and drink with pain in chewing and swallowing. When the swelling begins on the inside of the jaw-bone, it is much longer in coming to maturity than when it begins more towards the middle. When the skin is tight and much stretched over the swelling, and that feels unusually dry, and hot, the swelling will in that case be large before it breaks, and yield a plentiful discharge. When the swelling of the strangles rises between the jaw-bones, under the middle of the tongue, it is always the most favourable; but if it rises upwards among the glands, and is divided into several little tumours, it is not so kindly, but is apt to break in several places and at different times before it sinks, which renders the case more tedious and troublesome.

When the strangles begin directly in the upper part of the throat, towards the head of the wind-pipe and gullet, it hinders a horse sometimes from swallowing for several days, until the tumour grows full and large on the outside. This degree of the strangles is not altogether without danger of a suffocation. The pressure made upon the head of the windpipe makes the horse's eye look fixed, as if he was convulsed, with his nose turned outwards, and his nostrils open for want of breath; which symptom continues till the tumour, growing ripe, breaks and runs off. But the worst and most dangerous kind of strangles is, when at the same time that a horse is swelled under the jaws, he runs also at the nose, which Gibson attributes either to some constitutional malignity, or to bad management; and this is what some call the false or *bastard strangles*.

This disease seldom proves dangerous, unless the efforts of nature are interrupted. Doing much in this case, says Gibson, is worse than doing too little, for the strangles seldom needs any other help than to assist suppuration, by keeping the swelling always moist with camphorated hog's lard.

Some use poultices to the strangles; but besides the trouble of applying them, and renewing them often, they frequently prove hurtful, by being composed of materials that are too stimulating, as turpentine, &c. Besides, if the

poultices are not kept close, they are apt to chill the part, and to repel rather than promote a discharge of the humours, and this often leaves a dry and obstinate cough, or endangers the horse's eyes. Another error in the cure of the strangles, is opening the tumour before it comes to maturity, which defeats the purpose of nature, for there are found, in that case, callous swellings under the throat, with a gleet ulcer, sometimes followed by a plentiful running at the nose, which, without very great care, will end in the glanders. Of this Gibson speaks of having seen several instances. Therefore if the strangles proves kindly, and without uncommon symptoms, he insists, there is no need of any other application, besides keeping the part continually moist with some lenient ointment, till the tumour breaks and discharges itself, which for the most part happens in about five or six days. Some farriers are apt to open the tumours, or widen the orifice with tents; but this is altogether unnecessary, and often injurious, for nature does the business here effectually, unless the formation of matter has been hindered by some improper application.

If the strangles begin with great pain and inflammation, as sometimes happens; if the horse's eyes are fixed, and he look convulsed; his neck much swollen, and his jaws stiff, with his nose turned outwards; it is then necessary to take away a sufficient quantity of blood, to foment and apply a bran poultice to the part, covering it with a thin woollen cloth; and this should be persevered in till it comes to maturity and breaks. Sometimes the inflammation is so great as to destroy the skin that incloses the matter, by which means it falls off in pieces, like an eschar made by a caustic, and exposes the interstices of the muscles, and contiguous glands. But here also nature will effect a cure, without any other help, besides what has been already recommended; for the cavity is soon filled by a new growth of flesh, and covered with skin and hair, as perfect as at first. Sometimes the strangles break inwardly, and the matter is discharged chiefly by the mouth; and when it is so, the horse's mouth may be washed once or twice a-day, with equal parts of brandy and vinegar, with a spoonful of honey to each pint. This, with warm soft diet, will perfect the cure without any other help, and the swelling on the outside will soon wear off.

In some cases, where there is little swelling and inflammation, the horse will eat and drink without pain; and though there be a collection of matter, yet when it is small, it sometimes continues long without breaking. When matter



is formed in this way, and may be felt by gentle pressure with the finger, Mr. Denny advises us to open the tumour with a lancet in the most depending part, as this prevents any ulceration of the skin. If the tumour has been very large, he advises that a seton should be introduced, to support the discharge till the cavity be filled up, after which it is to be withdrawn.

"If the animal does not recover his strength," says the same writer, "but becomes weaker, with the continuance of a fetid discharge from the nose, accompanied with a cough and difficult respiration, the following mixture should be given every four hours, until an alteration takes place:

Take of Peruvian bark, in powder, half an ounce;  
Liquorice root, sliced,  
Aniseeds,  
Coriander seeds, bruised, of each one ounce;  
Water, two quarts.  
Boil them for ten minutes; then strain, and add, of  
Tincture of opium, two drachms;  
Honey, two ounces. Mix.

"When the danger is removed, discontinue the mixture, and give the following ball every morning and night, with mashees of malt or oatmeal, and bran, to recruit the animal's strength:

Take of Peruvian bark, half an ounce;  
Myrrh, in powder, two drachms;  
Gentian,  
Aniseeds, of each half an ounce;  
Honey, enough to make them into a ball.

"The horse must have gentle walking exercise, and good grooming, daily; and after his strength is returned, a dose of mild mercurial physic will be proper."

Gibson observes that horses have derived great benefit from the use of guaiacum, where the glandular discharges have been too liberal. "I had a fine horse," says he, "committed to my care, that was sent a journey in wet weather, the day after the strangles broke. He discharged a gleety water from under his jaws, and matter of the same consistence at his nose, and this had continued for several months, so that he was become quite extenuated, and exceedingly weak; for the running under his jaw was so profuse, that the litter was continually wet under him. This horse was soon cured, and restored to perfect health and vigour, by

strong decoctions of guaiacum. But I believe such cases as this seldom happen, and indeed very few horses would have stood it so long, but this was naturally a horse of great spirit and vigour, which no doubt contributed very much to his recovery." He also speaks of several young horses that had small loose kernels under the jaws, with a running at the nose, of a white matter, sometimes more, sometimes less, for a year or two, and sometimes they would be altogether free from it. In these cases, he says, the guaiacum decoctions were of great benefit.

STRANGURY, a disease whose characteristic symptom is a partial suppression of urine, but at the same time unaccompanied by fever, or other general symptoms.

It is the effect of irritation, occasioning a spasmodic contraction about the neck of the bladder. Mr. DENNY recommends the following treatment.

"If much irritation prevails, take away four or five pints of blood, and give the following ball and mixture:

Take of Camphor, in powder, two drachms;  
Nitre, in powder,  
Common soap, of each half an ounce;  
Balsam of capivi, enough to make a ball.

Take of Gum arabic, in powder, two ounces;  
Tincture of opium, half an ounce;  
Simple peppermint water, two pints.  
Dissolve the gum first in the mint water, and then add the tincture of opium.

Repeat this in the course of six or eight hours, if necessary; taking the precaution of clearing the bowels with the following clyster:

Take of Tincture of opium, two drachms;  
Oatmeal gruel, three quarts;  
Common salt, four ounces;  
Olive oil, half a pint. Mix.

"The horse's food should consist of bran mashees, warm water, or gruel. The cure may also be promoted by applying fomentations of chamomile flowers to the perinæum."

When the stoppage of urine proceeds from matter in the bladder, derived from the kidneys, which happens in some colds, or after some kinds of fevers, Gibson recommends a decoction made with the roots of marsh-mallows; to which he adds nitre, gum arabic, &c. He says he never observed any stoppages that were insurmountable, either in the neck of the bladder or urethra in horses, as is usual in men,

from gritty matter, stones, or ulcers. "These last," says he, "are so rare, that among the great numbers I have been concerned with, I can remember only one instance of a schirrous and sinuous ulcer, or rather cancerous, in the urethra of a horse, that spread itself through a considerable part of the cavernous body of the penis. This continued several years, but was never cured, neither could it admit of a cure at the time I was made acquainted with it." See KIDNEY.

**STRAPS OF A SADDLE**, are small leather straps, nailed to the bows of a saddle, with which the girths are made fast to the saddle.

**STRATA**, the same as *layers*; as *stratum super stratum*, which are rows over one another: and *stratification* is a term also used by the chemists, for the same purpose.

**STREMA** (στρεμμα, from στρέφω, *to turn*), a strain, or sprain, of the parts about a joint.

**STRENGTH**. There is no need of explaining this term in all the respects it is used, unless as it concerns the animal economy, wherein the strength of different animals of the same species, or of the same animal at different times, are in a triplicate proportion of the quantities of the mass of their blood. And the whole strength of an animal is the force of all the muscles taken together; therefore whatsoever increases strength increases the force of all the muscles, and of those serving digestion as well as others. Yet, notwithstanding the truth of this, the quantity of blood may be increased in such circumstances, as to abate the strength. The equilibrium between the blood and vessels being destroyed, wonderfully lessens the strength. The sudden suppression of perspiration, though it increase the quantity of the blood, as it must considerably do by Sanctorius's calculation, yet it lessens the strength, because the retained matter being what ought to be evacuated, so alters the texture of the blood, as to make it unfit for muscular motion. Suppose the increased quantity to be joined by an extraordinary viscosity, the quantity of small separable parts decreasing, as the viscosity increases, the quantity of animal spirits, separated in the brain, will be less; and the tensility of the fibres being, in proportion to the animal spirits, forced into them, they will not be able to counterpoise the great weight of the blood, and so the strength will be diminished. Boerhaave attempts to prove, that if the blood be so vitiated as to increase or diminish strength, it is the same as if the blood was in a natural state, but its quantity increased or diminished in the same propor-

tion: concluding, that the blood, when vitiated, may so impair the strength of the muscles, as to impede even digestion; and yet, in some cases, that it may be so vitiated as to help digestion, and to increase strength.

**STRENGTHENERS**, in the farrier's dispensatory. See RESTORATIVES.

**STRICTOR**, the same as SPHINCTER, which see.

**STRIDOR**, gnashing of the teeth. Sometimes the locked jaw is thus named.

**STRIGIL**, or **STRIGILIS**, an instrument to scrape off the sweat during the gymnastic exercises of the ancients, and in their baths: strigils were made of metals, horn, or ivory, and were curved; some were made of linen. Something of this kind is used to remove the foam and sweat on a horse's body after a race.

**STRIGMENT**, the filth, or fordes, scraped from the skin after violent exercises.

**STRING-HALT**, an involuntary and convulsive motion of the muscles, which extend or bend the hough. When it seizes the outside muscles, the horse straddles, and throws his legs outwards; but when the inside muscles are affected, his legs are twitched up to his belly. Sometimes it is only in one leg; sometimes in both. It generally proceeds from some strain or blow, and the cure is difficult, and seldom attended with success; though, in the beginning, a stringhalt may be removed with good rubbing and the use of fomentations, with daily but moderate exercise. The last refuge is usually the fire, which Gibson says has been known to answer at least so far as to prevent absolute lameness.

**STRUMA**, a distemper, wherein the glands are very much indurated. It is distinguished by old writers into different kinds, from the parts which are chiefly affected; but it is the same as scrophula. Hence, the epithet *strumous* expresses such swellings in the glands as happen in that disorder.

**STRYCHNOMANIA**. So the ancients called the disorder produced by eating the deadly nightshade.

**STUB**, a splinter of fresh cut underwood, that gets into a horse's foot, as he runs, and, piercing the sole through the quick, becomes more or less dangerous, according as it sinks more or less into the sensible parts.

**STUD**, a place where stallions and mares are kept to propagate their species; or it signifies the stallions and breeding mares themselves. See the articles BREEDING, COLT, HORSE, MARE, STALLION, &c.



**STUM**, must, whose fermentation has been prevented or prematurely suppressed by fumigation with sulphur.

**STUMBLING**, in a horse, occurs either naturally or accidentally. The fore-legs of a stumbling horse are too straight, so that he is not able to use them with proper freedom. To shoe a horse which stumbles is a nice point. You must shoe him quite contrary to those horses which tread only upon the toes of their hind-feet; for you must take down his toe very much, and also shorten it, that he may not meet so easily with impediments and stones upon the highways. Solleysel and others advise this, though we doubt its efficacy.

**STUPE**, a hot decoction of herbs; the same as **FOMENTATION**.

**STUPOR**, numbness, occasioned by any accidental bandage that stops the motion of the blood and nervous fluid, or from a decay in the nerves, as in a palsy.

**STURDY**, a name for the staggers. See **STAGGERS**.

**STYE**. See **STIAN**.

**STYLO-CERATO-HYOIDEUS**. *Stylo*, from the *styloid process*, and *κερατα*, horns of the *hyoides*.—The *stylo-hyoid process*. See **STYLO-HYOIDES**.

**STYLO-CHONDRO-HYOIDÆUS**. So Douglas names one of the muscles called *stylo-hyoidæus*, because it is inserted into the cartilaginous appendix of the *os hyoides*.

**STYLO-GLOSSI** (from *stylus*, a pencil, and *glossa*, a tongue). These muscles rise from the inner part of the *styloid process*, and go the whole length of the tongue, serving to expand it.

**STYLO-HYOIDES**, vel *cerato-hyoidæus*. It rises from the *processus styloides*, and runs to the cornu and basis of the *os hyoides*. Generally its fibres pass on each side of the tendon of the *diaphragmatic muscle*.

**STYLO-PHARYNGÆI**. These muscles rise from the beginning of the *styloid processes*, and are inserted into the *pharynx*, and into the *thyroid cartilage*. See **PHARYNX**. For these muscles in the horse, see **Plate XXII.** and their description under **MUSCLES**.

**STYLOID-PROCESS** (from *στυλος*, a pencil, and *ειδος*, form; called also *belemnoides*, *styloformis processus*). From under the craggy part of the temporal bone, this process stands out obliquely forward. The shape is said to resemble the ancient *stylus scriptorius*; hence its name. Several muscles have their origin from this process, and borrow one half of their name from it; *stylo-*

*glossus*; *stylo-hyoidæus*; *stylo-pharyngæus*, which see. This process, even in adults, is not entirely ossified, but is ligamentous at its root, and is sometimes composed of two or three distinct pieces.

**STYMATOSIS**, bloody discharges from the pelvis.

**STYPTICS**, medicines which, by their astringent qualities, stop hæmorrhages and violent bleedings. There are several medicines applied with this intention, but one of the most celebrated preparations for this purpose, in the *Farrier's Dispensatory*, is that sold under the name of *Colebatch's styptic powder*, prepared as follows:

Take any quantity of the filings of iron; •

Pour upon them spirit of salt, to the height of three or four fingers.

Let them stand until the fermentation is over, and the spirit of salt is become sweet; then pour off what is liquid, and evaporate it in an iron or glass vessel, until half is consumed; at which time put to it an equal quantity of *saccharum saturni* (*cerussa acetata*), and evaporate to a dry powder, which is to be close kept from the air.

This is of great efficacy in stopping any hæmorrhage of blood, from wounds or ruptured vessels, by applying it only to the part, and keeping it afterwards covered. *Styptics* of inferior power are alum, vitriolated metals, as iron, copper, zinc, &c. and some gums, as kino, &c.

**STYRAX** (from *στυραξ*, a reed); also called *storax*; because it was formerly brought to us in reeds or canes, it was named *styrax calamita*. Indeed the dry sort is called *calamita*, to distinguish it from the liquid. Caspar Bauhine calls the tree that affords it *styrax folio mali cotonei*, because its leaves are like those of the quince-tree. Ray calls the tree from which the liquid styrax is obtained *styrax aceris folio*, because its leaves resemble those of the maple. It is the *styrax officinale*, LINN.

*Storax* is the most fragrant of the solid resins, and, indeed, of all the vegetable substances. There are three kinds: 1. The *fine sort*, called the *red storax*; which is the pure native juice that flows from incisions made into the trunk of the tree. 2. The *common storax*: supposed to be the thinner juice thickened with saw-dust. 3. *Storax in the lump*; in masses of an uniform texture, and of a yellowish red or brownish

colour, sometimes interspersed with whitish grains. This is called *storax in the tear*.

It is the produce of Syria, Cilicia, and Pamphylia: some say that true storax is also a produce of Italy and the Levant, and is indigenous to several of the southern parts of Europe; yet the resinous drug which it produces is only to be obtained in perfection from those trees growing in Asiatic Turkey. There is a sort in America, but it differs much from the above. It exudes from the leaves of the trees in the warm climes where it is produced, but is most abundantly obtained by making incisions through their bark.

Neumann says, that an ounce of common storax gave out to rectified spirit of wine six drachms of resinous matter, then to water half a drachm of gummy, and the rest was saw-dust; and that on heating another ounce with water first, he obtained two drachms of gummy, then with spirit half an ounce of resin. Pure spirit raises but little from the storax by distillation, but water takes up much of its flavour; and when it is almost all drawn off, a fine subtle essential oil rises. Gibson extols storax as being "wonderfully good in broken-winded and consumptive cases."

**SUBCLAVIAN** (from *sub*, under, and *clavicular*, the *channel-bone*). The arteries thus named are so called from their situation being under the clavicles in the human subject. They arise from the arch of the aorta, on each side of the left carotid, which commonly lie in the middle between them. The origin of the left subclavian artery usually terminates the aorta ascendens. These arteries on each side terminate at the upper edge of the first rib between the lower insertions of the first scalenus muscle, and there, as they go out of the thorax, they take the name of the *arteriæ axillares*. The *subclavian muscle* rises by a small tendon from the anterior part of the cartilage of the first rib, close to the strong ligament which connects this rib to the clavicle, and runs along the whole under side of the clavicle into the coracoid process, where it is articulated to the clavicle. Its use is to bring the clavicle upwards and forwards.

**SUBCOSTALES**. These muscles are situated more or less obliquely on the inside of the ribs, near their bony angles, and run in the same direction with the external intercostals.

**SUBCUTANEOUS**, any thing under the skin: whence some writers apply this epithet to those tumours which do not extend far enough to affect it; or where the obstructed matter gathers all together below it.

**SUBDUCTION**, is variously applied; but the only signification worth notice here is given it by Bellini, who applies it to that motion of an artery when it is in its systole, or withdraws from the touch inwards.

**SUBJECT**, in the manege. *To keep a horse subject* is an expression relating to volts, signifying to keep the croupe of the horse in the round, so that it may not slip out; that he may not traverse; and that he may work in the manege, croupe in, marking his equal times without losing his ground.

**SUBLIMATION**. As all fluids are volatile by heat, and, consequently, capable of being separated, in most cases, from fixed matters, by the foregoing process, so various solid bodies are subjected to a similar treatment. Fluids are said to distil, and solids to sublime; though sometimes both are obtained in one and the same operation. If the subliming matter concrete into a mass, it is commonly called a *sublimate*; if into a powdery form, *flowers*.

The principal subjects of this operation are, volatile alkaline salts; neutral salts composed of volatile alkalies and acids, as sal ammoniac; the salt of amber, and flowers of benzoin; mercurial preparations; and sulphur. Bodies, of themselves not volatile, are frequently made to sublime by the mixture of volatile ones: thus iron is carried up by sal ammoniac in the preparation of the ferrum ammoniacale.

The fumes of solid bodies, in close vessels, rise but a little way, and adhere to that part of the vessel where they concrete. Hence a receiver or condenser is less necessary here than in the preceding operation; a single vessel, as a matraass, or tall vial, or the like, being frequently sufficient.

**SUBLIMATE**, or **CORROSIVE SUBLIMATE**, an active preparation of mercury much used in veterinary practice. In the new dispensatory it has the name of *hydrargyrus muriatus, muriated quicksilver*. It is thus made:

Take of Purified quicksilver, two pounds;  
Vitriolic acid, thirty ounces;  
Dried sea-salt, four pounds.

Mix the quicksilver and vitriolic acid in a glass vessel, and boil in a sand-heat, to dryness. Mix these, when cold, with the sea-salt, in a glass vessel; then sublime in a glass cucurbit, with a heat gradually raised; and, lastly, separate the sublimed matter from the scoria.

The form is somewhat different in the Edinburgh dispensatory. Thus,



Take of Quicksilver,

Dilute nitrous acid, of each four ounces;

Dried sea-salt,

Vitriolated iron, of each five ounces.

Let the quicksilver be dissolved in the nitrous acid, and the solution evaporated to a perfectly dry mass; then add the sea-salt and vitriolated iron. When well rubbed and mixed together, let them be put into a phial, which they will about half fill; and sublimed from sand, first with a gentle fire, which must be afterwards gradually increased.

Both these preparations consist only of mercury and the acid of the sea-salt united together. In the latter process, the materials being mixed and exposed to the fire, first the vitriol parts with its acid; which, dislodging those of the nitre and marine salt, takes their place. The marine acid, resolved into fume and assisted by the nitrous, dissolves the mercury now also strongly heated. This acid, though it very difficultly acts on mercury, yet when thus once united with it, is more strongly retained thereby than any other acid. The nitrous spirit, therefore, having nothing to retain it (for its own basis and that of the sea-salt are both occupied by the vitriolic, and that which the vitriolic forsook to unite with these, is now scarcely combinable with it), arises; leaving the mercury and marine acid to sublime together, when the heat shall be strong enough to elevate them. Some small portion of the marine spirit arises along with the nitrous; and hence this compound acid has been employed, formerly, for making the red corrosive.

It appears, therefore, that the vitriol, and bases of the nitre and sea-salt, are of no further use in this process, than as convenient intermedia for facilitating the union of the mercury with the marine acids. They likewise serve to afford a support for the sublimate to rest upon, which thus assumes the form it is expected in, that of a placenta or cake.

There are sundry other ways of making this preparation, or of combining mercury with the marine acid; but that adopted by the London college is one, at least, of the best. For there, mercury, corroded by the vitriolic acid into a white mass, is mixed with an equal quantity of sea-salt and set to sublime; the vitriolic acid will quit the mercury to unite with the basis of the sea-salt; and the acid of the sea-salt, now set at liberty, will unite with the mercury, and sublime with it into the compound required. The dis-

covery of this method is generally attributed to Boulduc; though it is found also in Kunckel's *Laboratorium Chymicum*.

If the mercury be corroded by the nitrous instead of the vitriolic acid, the event will be the same; that acid equally quitting the mercury, and setting loose the marine; and the sublimate made by this method is the same with the foregoing; but as the quantity of fixt matter is small, it difficultly assumes the form of a cake. It requires, indeed, some skill in the operator, to give it this appearance when either process is followed. The general effect of this remedy is that of other mercurials, but it is more likely than some other preparations of quicksilver to disturb the stomach and bowels. Topically used, it is a most active caustic.

SUBLIMIS, the same as PERFORATUS, which see.

SUBLINGUAL (from *sub*, under, and *lingua*, the tongue); as the sublingual artery, gland, &c.

SUBLUXATION, is where the head of a bone is not quite out of its socket, but rests upon the brim.

SUBMERSION, drowning. In Dr. Cullen's *Nosology*, it is a variety of the *Apoplexia Suffocata*. The epithet *submersed* is used for any thing dipped under water; whence, by some, it is applied to a low and almost undiscernible pulse.

SUBOCCIPITALES NERVI. So the tenth pair of nerves are called, which proceed from the head.

SUBORBITARIUS, a branch of the upper maxillary branch of the fifth pair of nerves.

SUBSCAPULARIS, MUSCULUS, covers all the internal side of the scapula. It arises fleshy from the upper and lower costa, and is inserted into the neck of the humerus. It draws the arm to the ribs.

SUBSIDENCE, is the settling of any thing: the same as sediment.

SUBSTITUTE, is said of one medicine put in the room of another, nearest to it in virtue, when that cannot be had.

SUBSULTUS (from *sub*, under, and *salio*, to leap), the same as spasmodic, or a convulsion from the sense of leaping, which the tendons give to the hand lying upon them.

SUBTILIZATION, is making any thing smaller, so as to rise in vapour. See DISTILLATION and SUBLIMATION.

SUCCAGO, i. e. the rob of any fruit.

SUCCEDANEUM, is any thing substituted in the room of another.

SUCCINATES, are salts formed by the combination of the succinic acid, or acid of amber, with different alkaline, earthy, and metallic

bases. There are twenty-three species enumerated in M. Fourcroy's Elements of Chemistry.

**SUCCINUM**, i. e. **AMBER**, called also *carabe*, or *karabe*, and *electrum*. The college have retained amber in their Pharmacopœia; its preparation is noticed among the more simple preparations: its purified salt, *sals purificatus*; oil, *oleum*; and rectified oil, *oleum rectificatum*, are directed: as is also its combination with the caustic volatile alkali, and vinous spirit, called *spiritus ammoniæ succinatus*; this is *eau de luce*.

**SUCCULENTÆ** (from *succus*, *juice*), an order of plants in the *Fragmenta Methodi Naturalis* of Linnæus, containing several genera, the melon-thistle, &c.

**SUCCUS**, is any juice; as that of lemons, &c. It is also used anatomically; as *Succus Nutritivus*, chyle; *Succus Pancreaticus*, the juice separated by the pancreas, &c.

**SUCCUSSATION**, and **SUCCUSSIO**, is such a shaking of the sensible parts as is procured by strong stimuli, like sternutatories, friction, and the like, which are commonly used in apoplectic affections.

**SUDAMINA**, transitory red stinging spots on the skin. By the name of *sudamina* the ancients called those small pimples of the bigness of millet-seeds, which exulcerate the cuticle.

**SUDOR**, **SWEAT**. See **SWEAT** and **PERSPIRATION**.

**SUDORIFICS** (from *sudor*, *sweat*, and *fio*, *to make*); medicines which excite sweating. See **PERSPIRATION**. When a sweat is to be excited, it should be considered whether the heat of the body is above or below that degree which admits of this evacuation. The usual natural heat in different animals may somewhat vary, and for this an allowance is to be made; but whether the degree of heat is in a healthy state, if the patient be only ten degrees hotter by Fahrenheit's thermometer, he cannot be made to sweat. It is true, that in striving to raise a sweat on our own bodies by the use of diluting liquors, heat will be increased above this, and the sweat notwithstanding follow; but if the diluting drinks were not used, other means would fail. In this case, cooling methods must be used, such as cold water for drink, cool air admitted to the body, and cooling medicines given internally. If the heat is below the standard of health, warm water and cordials must be used, the patient must be kept in a warm place or in warm clothing. As sweating greatly cools the body, it should be cautiously used in low and putrid fevers. When a sweat is once raised, the drink should be warm, and supplied more or less freely, according to the degree and con-

tinuance of the sweating. Sweating is rarely of use when bleeding is unsafe; though, in such cases, a gentle perspiration may generally prove salutary in the diseases both of men and quadrupeds.

**SUFFIMENTUM**, and **SUFFITUS**, the same as *fumigation*, by burning things upon live coals, and receiving the steam on the part affected.

**SUFFOCATION**, difficulty of respiration, from narrowness of the fauces, from a spasm there, or other causes. See **RESUSCITATION**.

**SUFFUSIO**, the same as **CATARACT**. See the article **EYE**.

**SUGILLATION** (from *sugo*, *to suck*). This word is generally used as synonymous with *ecchymosis*, and to signify the same thing.

**SULPHATES**, are salts, of which M. Fourcroy enumerates twenty-four species, formed by the combination of the sulphuric acid with different alkaline, earthy, and metallic bases. Sulphate of alumine, is alum, or vitriolated clay; sulphate of copper, is Roman vitriol, blue-stone, or vitriolated copper; sulphate of iron, is green copperas, or vitriolum viride; sulphate of lead, is vitriol of lead; sulphate of lime, is vitriolated lime, selenite, gypsum, or plaster of Paris; sulphur of magnesia, is vitriolated magnesia, or Epsom salt; sulphate of pot-ash, is vitriolated tartar, or vitriolated vegetable alkali.

**SULPHITES**, are salts formed by the union of the sulphureous acid (see **ACIDS**), with the different alkaline, earthy, and metallic bases; there are twenty-four species enumerated in M. Fourcroy's Elements of Chemistry.

**SULPHUR**, or **BRIMSTONE**, a yellow substance, of the mineral kingdom, fusible in a small degree of heat, totally volatile in a stronger, readily inflammable, burning with a blue flame, which is accompanied with a suffocating acid fume. It dissolves in alkaline liquors and in oils; not in acids, water, or vinous spirits.

Greatest part of the sulphur met with in the shops is obtained from certain ores by a kind of distillation, or artificially composed by uniting the vitriolic acid with inflammable matters. At some of the Saxon sulphur-works (whence we are chiefly supplied) certain minerals abounding with vitriolic acid, but containing little or no sulphur, being stratified with wood, and the latter set on fire, a large quantity of fine sulphur is produced. It is usually brought to us in large irregular masses, which are afterwards melted and cast into cylindrical rolls, with the addition of some coarse resin, flour, or the like; whence the paler colour of the rolls. Sulphur is not also unfrequently found native



in the earth, sometimes in transparent pieces of a greenish or bright yellow colour; but more commonly in opaque grey ones, with only some streaks of yellow. This last is the sort which is understood by the name *fulphur vivum*, though that met with under this name in the shops is no other than the dross remaining after the sublimation of sulphur. All the sorts of sulphur are, when perfectly pure, in no respect different from one another: notwithstanding the preference given by some to the more uncommon fossil sorts, these last are of all others the least proper for medicinal purposes, as being the most subject to an admixture of foreign matter, both of the metallic and arsenical kind.

Pure sulphur loosens the belly, and promotes insensible perspiration: it seems to pass through the whole habit, and manifestly transpires through the pores of the skin. It is a celebrated remedy against cutaneous diseases in all animals, both given internally and externally applied. It has likewise been recommended in coughs, asthmas, and other disorders of the breast and lungs, and particularly in catarrhs of the chronic kind. But probably the benefit derived from its use is owing to its laxative and diaphoretic powers.

Though sulphur is not soluble in cold water, yet boiling water poured upon it, and kept in a close vessel, obtains some impregnation, sufficient to render it an effectual remedy for preventing returns of the gout and rheumatism, according to the accounts of some writers. Sulphur is never used internally in its crude state. Combined with fixed alkali, it forms *liver of sulphur*. The *fulphur vivum* is advantageously used against the mange and other eruptions, in the form of ointment. See MANGE. When it is given internally, it is either after it is sublimed or precipitated: but the flowers are most commonly exhibited to cattle in drenches. Given with antimony to horses it has the effect of making their coats sleek, and is reckoned a good alterative. Dissolved by boiling in olive oil, they make what is called *balsam of sulphur*, a useful remedy in chronic affections of the lungs, especially when *oil of aniseed* is added.

SULPHURES, or SULPHURETS, are combinations of sulphur, with different alkaline, earthy, and metallic bases: there are thirty-one species enumerated by M. Fourcroy.

SUMMITATES, TOPS, are the tops of herbs.

SUMPTER HORSE, a name for a horse that carries provisions and necessaries for a journey.

SUPERBUS, the same muscle as *Attollens* (which see); thus called because, as it lifts up the eye-brows, it gives an air of *pride*.

SUPERFŒTATION (from *super*, above, or over, and *fœtus*, an embryo), is when one conception follows another by a future coition, so that both are in the womb together, but come not to their full time for delivery together.

SUPERSCAPULARIS, the same as SUPRASPINATUS, which see.

SUPINATORS, two muscles, the *longus* and *brevis*, in the human subject. The first arises by a fleshy beginning, three or four fingers breadth, above the external extuberance of the humerus. It lies all along the radius, to whose inferior and external part it is inserted by a pretty broad tendon. The last comes from the external and upper part of the ulna, and, passing round the radius, it is inserted into its upper and fore-part, below the tendon of the biceps. Those turn the palm of the hand upwards.

SUPPLE, in the manege. To *supple* a horse, is to make him bend his neck, shoulders, and sides, and to render all the parts of his body more pliable.

SUPPOSITORY (*suppositorium*, from *sub*, under, and *pono*, to put), a form of medicine to be thrust up the fundament, when clysters are not convenient.

SUPPRESSION, is used for the stoppage of the urine, or any other discharge. See STRANGURY.

SUPPURATION, the ripening or change of the matter of a tumour into pus, which may be effected either by natural means, or by the *vis vitæ*, or by the use of artificial compositions, by way of plasters, cataplasms, or the like. See ABSCESS.

SUPRASCAPULARIS, i. e. SUPRASPINATUS.

SUPRASPINATUS, is a muscle that arises fleshy from all the basis of the scapula that is above the spine. It fills all the space between the upper side of the scapula and its spine, to which it is also attached. It passes above the acromium, over the articulation of the humerus, which it embraces by its tendon. It helps to lift the arm upwards.

SURBATING. A horse is said to be surbated, when the sole is worn out, bruised, or spoiled by any accident, as by bad shoeing, especially when the shoes lie flat on the feet; or when the horse goes too long barefoot; as also, by travelling on hard ways, or among dry hot sand in hot weather, which dries the hoof, whereby the sole, becoming hard, presses upon the soft parts beneath it. If a horse be surbated by bad shoeing, you may know the part that is

affected, by the thinness of the shoe, where it presses most; and therefore it ought to be pared deepest in that part, before another is put on; but if the shoe is not in the fault, it may be known that he is surbated by his continual hitching and moving: but by feeling his hoofs, you may observe them both very hot and dry.

Gibson says, the cure is very easy, before it becomes attended with other accidents, and may be performed only by stopping up the feet with cow's dung and vinegar. Some use only hog's grease, hot, thickened with bran; and others make use of vinegar and foot boiled together: but nothing will be more efficacious, in case it be troublesome, than first softening the sole with the application of unctuous things, and after that pouring a mixture of warm pitch and tar upon the sole.

#### SURDITAS, deafness.

SURFEIT, a term unknown to modern veterinarians, though, with those of the old school, of very extensive import. We must of necessity therefore stand indebted to some individuals of the former class for the following explanation of it. Bracken says, "a *surfeit* is principally understood to be all such maladies or distempers as proceed from excessive and immoderate feeding, but especially upon unwholesome food, from cold and hard riding, &c. whereby a horse forsakes his meat, and is infected with hard swellings, which, if they happen to fall upon the joints, will in process of time occasion lameness and many other disorders.

"Surfeits arise from various causes, but are commonly the effects of some diseases not attended to; or that have been ill cured. A horse is said to be surfeited, when his coat stares and looks rusty and dirty, though proper means have not been wanting to keep him clean. The skin is full of scales and dander, that lie thick and mealy among the hair, and is constantly supplied with a fresh succession of the same, for want of due transpiration. Some horses have hurdles of various sizes, like peas or tares. Some have dry fixed scabs all over their limbs and bodies; others a moisture attended with heat and inflammation; the humours being so sharp, and violently itching, that the horses rub so incessantly, as to make themselves raw. Some have no eruption at all, but an unwholesome look, and are dull, sluggish, and lazy. Some appear only lean and hide-bound, others have flying pains and lameness, resembling a rheumatism; so that, in the surfeits of horses, we have almost all the different species of scurvy, and other chronical distempers."

The following method of cure, Gibson says, is usually attended with success in the dry species. "First take away about three or four pounds of blood; and then give the following mild purge, which will work as an alterative, and should be repeated once a-week or ten days, for some time:

Take of Succotrine aloes, six drachms, or one ounce;

Gum-guaiacum, half an ounce;

Diaphoretic antimony,

Myrrh, of each two drachms;

Make into a ball with syrup of buckthorn.

"In the intermediate days, an ounce of the following powder should be given morning and evening in the feeds:

Take of Cinnabar of antimony, finely powdered, half a pound;

Crude antimony, in fine powder, four ounces;

Gum-guaiacum, also in powder, four ounces.

Make into sixteen doses, for eight days.

"This medicine must be repeated till the horse's coat is well, and all the symptoms of surfeit disappear. If the horse is of small value, two or three common purges should be given; and half an ounce of antimony, with the same quantity of sulphur, twice a-day; or alterative balls, with camphire and nitre.

"If the little scabs on the skin do not peel off, anoint them with the mercurial ointment; during the time of using which, it will be proper to keep the horse dry, and to give him warm water. This ointment properly rubbed into the blood, with the assistance of purging physic, has frequently cured these kinds of surfeit without any other assistance.

"The *wet surfeit*, which is no more than a moist running eruption, appears on different parts of the body of a horse, attended sometimes with great heat and inflammation; the neck sometimes swells so in one night's time, that great quantities of hot briny humour issue forth, which, if not allayed, will be apt to collect on the poll or withers, and produce the poll-evil or fistula. This disease also frequently attacks the limbs, where it proves obstinate and hard to cure; and in some horses shews itself spring and fall.

"In this case, bleed plentifully; avoid externally all repellents, and give cooling physic twice a-week, as four ounces of lenitive elec-



tuary, with the same quantity of cream of tartar; or the latter with four ounces of *Glauber's salts*, quickened, if thought proper, with two or three drachms of powder of jalap dissolved in water-gruel, and given in a morning fasting. After three or four of these purges, two ounces of nitre made into a ball with honey may be given every morning, for a fortnight; and, if attended with success, repeated for a fortnight longer. The powder above mentioned may be given with the horse's corn, or a strong decoction of guaiacum shavings, or logwood, may be given alone to the quantity of two quarts a-day. These, and indeed all alterative medicines, must be continued for a long time, where the disorder proves obstinate.

"The diet should be cool and opening, or scalded bran or barley; and if the horse is hide-bound, an ounce of fenugreek-seeds mixed with his feeds should be given for a month or longer; and as this disorder often proceeds from worms, give the mercurial physic too, and afterwards the cinnabar powders as already directed: but as, in general, it is not an original disease, but a symptom only of many, in the cure regard must be had to the first cause: thus, as it is an attendant on fevers, worms, &c. the removal of this complaint must be variously effected."

SUSPENDED ANIMATION. See RESUSCITATION and DROWNING.

SUSPENSORIUM, a truss, or suspensory bandage.

SUSPENSORIUS, a name given to a muscle in different situations, whose office is to sustain a hanging weight. In the testis it is otherwise called *cremaster*. For an account of this muscle in the eyes of brutes, see the article QUADRUPED.

SUTURE, in anatomy, a particular articulation. The bones of the cranium, in all domestic quadrupeds, are joined to one another by four futures. The first is called the *coronalis*. It reaches transversely from one temple to the other. It joins the os frontis with the ossa parietalia. The second is called *lambdoidalis*, because it resembles the Greek letter  $\Lambda$ . It joins the os occipitis to the ossa parietalia and petrosa. The third is called *sagittalis*. It begins at the top of the lambdoidal, and runs straight to the middle of the coronal. It joins the two ossa parietalia together. The fourth is called *futura squamosa*, because the parts of these bones which are joined by this future are, as it were, cut slope-wise, and lapped over one another.

This future joins the semicircular circumference of the ossa temporum to the ossa sphenoides, occipitis, and to the ossa parietalia.

The first three futures were called *futura verae*, and the last *futura falsa*, because it was supposed to have no indentations, which is false.

In the human subject, the bones of the cranium are not only joined to one another, but they are also joined to the bones of the upper jaw by three other futures. The first is the *transversalis*: it runs across the face; it passes from the little angle of the eye down to the bottom of the orbit, and up again by the great angle of the eye over the root of the nose, and so to the little angle of the other eye. It joins the os frontis to the bones of the upper jaw.

The second is the *ethmoidalis*. It surrounds the bone of that name, and joins it to the bones which are about it. The third is the *futura sphenoidalis*; it surrounds the os sphenoides, joins it to the os occipitis, the ossa petrosa, and to the os frontis.

SUTURE (from *sow*, to join together), in surgery, is the uniting of the lips of a wound by sewing. Of these there are five kinds, with which every veterinary practitioner should be acquainted.

1. The *dry future*. This is made by two pieces of sticking-plaster, each the length of the wound, to which very narrow tapes are fixed at due distances. Apply one near one edge of the wound, and the other near the opposite edge; then gently draw the two sides of the wound together, and let the tapes be tied: they should correspond exactly; and the knots must be slip-knots. Or, take a slip of plaster, the length of the wound, and cut longitudinal holes in it; then apply one side near the edge of the wound, bring the lips close, and then apply the other. After this kind of future is applied, the uniting bandage is convenient to support it.

2. The *twisted future*. It is also called the *circumvolved future*. This is used for the hare-lip in the human subject, and in a few other instances. It is performed by introducing two or more pins through the whole substance of the lips of the wound, then twisting a waxed thread about them in the form of the figure 8.

3. The *interrupted future*, also called the *knotted future*. It is performed with any needle armed with a waxed thread, by thrusting it through both lips of the wound, then tying the thread in slip knots, making a number of stitches according to the length of the wound, at an inch from each other. The needle should go to nearly the bottom of the wound. A particular

regard should be paid to the direction of the longitudinal fibres of muscles in forming this suture, without so much regarding the direction of the wound; for, if we do not pass the ligature in the direction of the fibres, it will be a continual stimulus: it will excite the muscle to action, and occasion a perpetual tugging of the ligature, whence pain, inflammation, &c. will follow. Mr. Bell advises, in forming this suture, to carry the needle and ligature to the bottom of the wound, so as to afford but little chance of matter collecting underneath; and, further, he directs both ends of the thread to be passed from within outwards; which is readily done by using two needles upon each thread instead of one. A needle being put upon each end of the same thread, and each needle being inserted at the bottom of the fore, and pushed outwardly so as to pass out at a proper distance from the edge of the wound, the needles are then to be taken off, and the threads allowed to remain till all the ligatures are passed, which the extent of the fore seems to require. In passing the ligatures, pierce the skin from near half an inch to near an inch from the lips of the wound; these distances will include all the varieties in the size of wounds. As soon as the threads are all passed, the lips of the wound ought to be pressed together and supported by an assistant, till all the ligatures are firmly tied.

4. The *quilled suture*, so called because the knots were tied upon quills, which were laid over the dressings that immediately covered the lips of the wound.

5. The *glover's or uninterrupted suture*, called also the *spiral or the continued*. It is used in wounds of the intestines. This consists in a series of stitches all connected with one another, and continued in an oblique spiral direction along the course of the divided parts intended to be kept together. It takes its name from the similarity to that which glovers commonly use.

SWALLOWING, the act by which food is passed into the stomach of an animal. The superior part of the œsophagus in a horse is called pharynx, and is expanded at its top. Near this the œsophagus is situated more closely to the spine than the trachea, but about the fourth cervical vertebra, and appears parallel or below it. The œsophagus is continued into the chest, where it penetrates the diaphragm about the last true rib. The human œsophagus has been divided into circular and longitudinal fibres. In the horse we distinguish two parts—an internal merely cuticular, with little or no feeling or vascularity, and an external, which is powerfully muscular, and supplied with

blood-vessels. The cuticular coat lines the pharynx, and is continued in the horse through the œsophagus, and afterwards covers that part of the stomach called the insensible. See STOMACH.

Mr. Lawrence gives the following account of the "*swallowing of leeches, or hen's dung*," by horses. He says—"This accident frequently happens to country cart-horses, passing off with a slight sickness, and without notice. Whilst the horses are absent, the poultry will always watch the opportunity of examining the mangers, where they leave both dung and feathers, which ought ever to be carefully swept away, previous to feeding the horses. Horses drinking at ponds will often suck in a variety of filth and vermin. The signs of having swallowed leeches, or other vermin, are, hanging the head to the ground, and a discharge of impure saliva, sometimes mixed with blood. Give a pint of sweet oil warmed, with a glass of brandy, and a drachm of ground ginger. Scalded bran and gruel, and the oil may be repeated, if needful. A mild dose of aloes and rhubarb, with one ounce of diapente, may be given in warm ale.

"When any considerable quantity of fowls' dung and feathers has been swallowed, the horse will lose his appetite, swell in his body, and void fetid slimy matter from his fundament. The same medicines and treatment, with the addition of honey, are proper, with walking exercise, the horse clothed. Sow-thistle dried and powdered, smallage-seed bruised, marjoram, and the ashes of the root, leaves, and fruit, of briony, were the specifics of former times."

SWAYING OF THE BACK, a kind of lumbago known by a pain and weakness in the loins of a horse. It may be caused by a fall, the carrying of some heavy burden, or some other violent accident; or a relaxation or spasm of the muscles of the back. The first thing to be done in this case, is to take away plenty of blood; after which a blister is to be applied, and those things given inwardly that promote sweat. Mr. Snape advises that the horse may be sweated in a dunghill, if the common remedies fail. His diet must be opening, and all imaginable care taken to keep down a fever. He ought to be girt pretty firm over his loins, yet not so as to hinder the motions of his flanks. Gibson says, he ought also to be hung up, or kept in a steady posture; but if the weakness continues, you may proceed to the fire, by piercing the skin above the muscles that lie on each side of the spine, avoiding the flanks, otherwise it will be apt to create a swelling in the sheath, which would bring on a fever.



**SWEAT.** In order to sweat a horse, Bracken advises to give him the following drink :

Take of Venice-treacle, half an ounce ;  
 Contrayerva, in powder, two drachms ;  
 Camphire, powdered, a scruple.

Mix all these with a pint of small white wine ; or, for want of that, in a quart of stale beer ; and give it the horse milk warm.

The horse should then be covered with a hood, a blanket, and a rug, and well bedded, and not have any hay or corn for twelve hours. When ended, he should be cooled by degrees.

**SWEATING IRON**, a piece of a scythe, about a foot long, and of the breadth of about three or four fingers, very thin, and which cuts only with one side. When the horse is very hot, and the grooms have a mind to take off the sweat, they take this in their two hands, and gently run the edge along the horse's skin, commonly with the grain, or as the hair lies, with intent to scrape off the sweat and dry the horse.

**SWEETBREAD**, or Pancreas. See **PANCREAS**. It is a large gland, that lies across the upper and back part of the lower belly, under the stomach, to which it serves for a soft pillow to rest upon. It has a passage into the duodenum, a little way below the stomach, where the pancreatic juice is emptied by its proper duct.

**SWELLING**, or **TUMOR**. See the article **TUMOR**.

**SYMBOLE** (*συμβολή*), and *Symbolism*, is said either of the fitness of parts with one another, or of the consent between them by the intermediation of nerves, and the like.

**SYMBOLOGICÆ**, that part of pathology which treats of the signs and symptoms of diseases.

**SYMMETRY** (*συμμετρία*), an exact and beautiful proportion of parts to one another. See **PROPORTION**.

**SYMPATHETIC**, an epithet applied to certain nerves. These are the *Sympathetici Nervi Minores*, i. e. *Nervi Intercostales*. The *Sympathetici Medii*, i. e. *Par Vagus*. The *Sympathetici Minores* : to the auditory nerves are called.

**SYMPATHY** (from *συν*, *together*, and *παθος*, *suffering*). Animal bodies are, by means of the brain, not only endowed with feeling and a power of motion, but also a remarkable sympathy, which is either general or particular. That every part of the body has a sympathy with the whole, is evident from cold water

being thrown on any part of the warm skin ; this produces a sudden contraction of all the vessels and pores, and thus sometimes puts a stop to small hæmorrhages.—The effluvia of things smelled to, often communicate new vigour to the whole body.—This particular sympathy is manifest by various instances of diseases complained of in one part when the cause is in a very remote one ; for instance, pain in the head occasions sickness in the stomach, and so does pain in the uterus, &c. A sudden bright light entering the eye occasions sneezing. Some particular sounds affecting the ears set the teeth on edge. The smell of grateful food makes the saliva flow into the mouth. And this extends to many brute animals, as the dog, that howls from the impression made on his ear by music.

All sympathy supposes feeling, and therefore must be owing to the brain, which is the only medium of sensation. This further appears, because the changes in the body, occasioned by the sympathy of the parts, are stopped by whatever affects the nervous system so strongly as to overcome the sensations that produced the sympathetic effect.

Though all sympathy is owing to the brain, it is not easy to account satisfactorily for all the various instances of sympathy in particular cases ; for many of them may depend on such a state of the brain and other parts as do not become the object of our senses. It is probably by sympathy that medicines act on distant parts through the medium of the stomach, or even on the skin.

A diligent attention to this subject, whatever difficulties attend it, is followed with considerable advantage, by enabling us to account for many symptoms of diseases, and also to proceed so certainly to the cure, as, by any other known method, we could not have arrived at.

**SYMPHYSIS** (*συνφύσις*, from *συν*, *with*, or *together*, and *φύω*, *to grow*). In anatomy, it is a species of articulation, as in the *symphysis pubis*.

**SYMPHYTUM**, comfrey, a genus in Linneus's botany. He enumerates three species.

**SYMPTOM** (*συμπτωμα*, from *συμπίπτω*, *accido*, *to happen*), such a conjunction of appearances, or such an appearance of any one thing, as indicates what will be the issue of a disease, and the means of cure. Hence, the epithet *symptomatic* is often used to denote the difference between the primary and secondary causes in diseases, as a fever from pain is said to be symptomatic, because it arises from pain only : and therefore the ordinary means in fevers are not in such cases to be had recourse to, but to what will remove the pain ; for when

that ceases, the fever will cease without any direct means taken for that purpose. A *secondary symptom* is one that depends on a primary one.

**SYMPTOMATOLOGY**, the history of diseases. See **PATHOLOGY**, and **NOLOGY**.

**SYNARTHROSIS** (from *συν*, *with*, and *αρθρον*, *a joint*); that species of articulation in which there is no motion: it is of three kinds; the *futura*, the *harmonia*, and the *gomphosis*. See **ARTICULATION**.

**SYNCHONDROSIS** (from *συν*, *with*, and *χονδρος*, *a cartilage*); that species of symphysis in which the bones are connected by a cartilage, and is either moveable or immoveable: the first is instanced in the vertebræ of the neck, back, and loins; the second in the os pubis, the two sides of which are ordinarily immoveable. See **SYMPHYSIS**.

**SYNCYSIS** (*συνχυσις*), is when, from the violence of an ophthalmia, the cornea is left opaque or corroded, and there is the appearance of confusion in the humours of the eye.

**SYNCOPE** (*συνκοπή*, from *συνκνίω*, *concido*, *to fall down*), a sudden fainting, or rather a swooning away. In this disease the pulse and respiration become suddenly weaker than usual, and that in such a degree, that to the perception of the attendants, they wholly cease. Various names have been given to different degrees of this complaint; but as it is difficult to ascertain those degrees, one general name is the most proper. All warm-blooded animals are *capable* of syncope, though it is rarely seen among quadrupeds as a disease.

**SYNEUROSIS** (*συνευρωσις*), that species of symphysis in which the bones are connected by ligaments.

**SYNOCHIA** (*συνόχη*), and **SYNOCHUS** (*συνεχος*, from *συνεχω*, *substineo*, *to support*, or *held on*, or *συνεχω*, *continuo*, *to continue*), both signifying much the same: yet writers have made the former an intermitting, and the latter a continued fever. The *Synochus pleuritica* is an instance of *synocha*: as are also, *Synochus hiemalis*, and *Synochus rheumatifans*.

**SYNOVIA**, a transparent mucous fluid, which readily mixes with water, and partly jellies when exposed to cold. It is secreted from certain glands in the joints, and serves to keep their motions free and easy.

**SYNTERETICA**, that part of medicine which secures the present enjoyment of health.

**SYNTHESIS** (from *συντίθημι*, *synthesis*, *compono*, *to compound*), is sometimes used in opposition to analysis, and signifies the combination of any thing together by its different parts,

**SYRUP**, from the Chaldean word *sirpi*, or the Arabic word *sirab*, *a potion*, a saccharine solution in the state of a thick fluid.

**SYSARCOISIS** (*συσσάρκωσις*, from *συν*, and *σαρξ*, *flesh*); a species of symphysis of the bones. It is that in which they are connected by flesh, that is, by muscles, as in the connection of the os humeri with the scapula. In surgery, it is the method of curing wounds by the growth of new flesh.

**SYSTEM**, in a general sense, that combination of many things for the purpose of their operating together for some principal end; a scheme which reduces many things to a regular dependence or co-operation; the whole of any doctrine whose several parts are bound together, follow, or depend on, each other. The term is applied figuratively to the animal body, taken together; or, occasionally, to some of its parts; as the *system of blood vessels*, the *nervous system* or *system of the nerves*, &c. We avail ourselves of the latter, to rectify, as far as circumstances will permit, the unfortunate omission of the explanation of the figure of the nerves in a horse, represented in Plate XXIII. and which should have been annexed to the article **NERVE**.

Plate XXIII. represents the nerves, and their distribution into all parts of the body of a horse.

*a a.* The first pair, are the *olfactory* nerves that go to the nose, and the organs of smelling.

*b b.* The second are the *optic* nerves that contribute to sight.

*c c.* The third pair, viz. the *motores oculorum*, or movers of the eyes, are the nerves that are spread on the globe of the eye.

*d d.* The fourth, called the *pathetic* nerves, because they express some particular passions.

*e e.* The fifth pair, that are chiefly spread on the eye-lids and muscles of the eyes, and assist their motions.

*f f.* The sixth pair go to the *abductor* muscle of the eye, and communicating with a reflected branch of the fifth, forms the *intercostal*.

*g g.* The seventh pair go chiefly to the *ear*, and are dispersed on the organs of hearing.

*h h.* The eighth pair, called the *par vagum*, because they form the *recurrent* nerves which send branches to the *viscera*, and communicate with almost all the other nerves.

*i i.* The ninth, are chiefly spread on the substance of the *tongue*, and are the instruments of tasting.

*k k.* The tenth pair belong chiefly to the *extensor* muscles of the head.

*l l.* The branches that go to the shoulders.



## S Y S

*m m.* The branches that go to the fore feet and pasterns.

*n n.* The *recurrent* nerves.

*o o.* The branches that are spread on the thighs, from the *vertebra* of the loins.

*p p.* The branches that are distributed on the hocks, from the *os sacrum*.

*q q.* The nerves that are distributed on the hind pasterns and feet.

1, 2, 3, 4, 5, 6. The nerves that proceed from the medullary substance contained in the six *vertebra* of the neck.

## S Y S

1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18. The nerves that proceed from the medullary substance or pith of the eighteen *vertebra* of the *thorax* and back, which go to the ribs and all parts of the trunk.

1, 2, 3, 4, 5, 6. The nerves that proceed from the medullary substance of the six *vertebra* of the loins.

*i, i, i, i, i, i.* The nerves that proceed from the medulla of the three uppermost *vertebra* of the tail.

## T.

### T A I

**T**ABACUM, Virginian tobacco, a species of *nicotiana*. See *NICOTIANA*.

TABELLA, a morsel, is used for the same form of medicine as lozenge.

TABES, a general word signifying a wasting of the body, a consumption, &c. but properly it signifies a *wasting of the body attended with weakness*, or a *hectic fever*, but without expectoration from the lungs.

TABES, a consumption. See *CONSUMPTION*.

TABES DORSALIS, a consumption attended with a feminal weakness and peculiar affection of the loins.

TABLE MUSCLE, i. e. the *TRAPEZIUS*.

TACAMAHACA, a resin obtained from a tree which resembles the poplar-tree, viz. the *Fagara Oeltandra* LINN.

TÆNIA, a broad worm like a piece of tape, for which reason it is called the *tape-worm*. See *WORMS*.

TAIL, that part of an animal which projects from the rump, and which is useful to it as a means of brushing off flies, &c. This part is different in size and length in different quadrupeds. The horse's tail has undergone various modifications according to the fashion of the day, from the dock or stump of former times to the brushy half-lengths of the present.

### T A R

These indeed are the most rational and becoming, if any species of mutilation can be supposed to add to beauty. See the articles *DOCKING*, *NICKING*, &c.

The *lateral, intertransverse, elevating*, and other *muscles of the tail*, in the horse, are shewn in Plates XI. XV. and XVII. See *HORSE*.

TALC, a genus of gristly stone. It is soft, and unctuous to the touch, cutting and scraping easily, opaque, yet generally very glossy, and not of a stony, but of an earthy structure and appearance. *Venetian talc* is a variety of the laminated species of talc. It is composed of fine laminæ, very glossy, and of a greenish hue.

TAMUS, black briony, a genus in Linnæus's botany. There are two species.

TANACETUM, tansey, a genus in Linnæus's botany. He enumerates seven species and two varieties. The college have retained the *Tanacetum vulgare* LINN. in their Pharmacopœia. It is deemed a good anthelmintic.

TANSEY. See *TANACETUM*.

TAPETUM. The posterior part of the choroid coat, in brutes, is thus named. See *QUADRUPED*.

TAPE-WORM. See *TÆNIA* and *WORMS*.

TAPPING. See *PARACENTESIS*.

TARAXACUM, dandelion, a species of

*leontodon*. The college have introduced the root and herb of this plant into their Pharmacopœia. An extract has lately been prepared from it.

**TARAXIS** (from *ταρασσω*, to disturb), a disorder of the eye, such as when it is offended by smoke, or too hard rubbing.

**TARE**. See **VICIA**.

**TARSUS** (from *ταρσος*); the cartilaginous edge of the eye-lid. The edge of each eye-lid is principally formed by a thin cartilage, called *tarsus*, which is adapted to the shape and roundness of the eye. The lower edge of the superior cartilage, and upper edge of the inferior, meet with each other, and are termed the ciliary edges. These cartilages do not terminate in a line, like the sharp edge of a knife, but rather flat like the back of it; forming two edges, one external, the other internal. When the eyes are shut, the external edges meet; but the internal are preserved at a small distance from each other, leaving a gutter, or groove, through which the tears are supposed to pass from the lachrymal gland to the puncta lachrymalia, while we are asleep. The cilia, or eyelashes, which when too short are called *rodatio*, arise out of the external edge of the termination of this cartilage; and on the internal, at an evident distance from them, is a line of small orifices, which are the excretory ducts of small glands that lie in the inner surface of the tarsus, and are called *ciliares glandule*. See **EYE**. The space between the bones of the human leg and the metatarsus is also called *tarsus*.

**TARTAR**, a substance found sticking to wine-casks, like a hard stone, either white or red, as the colour of the wine from whence it comes. The white is preferable, as containing less dross or earthy parts. The best comes from Germany, and is the tartar of the Rhenish wine. Some of the old chemists pretended to do strange things with preparations from this material, and took abundance of pains in its volatilization.

**TARTAR, OIL OF**, *per deliquium*. The fixed vegetable alkaline salt strongly attracts moisture from the air, and is thereby resolved into a liquor, in which state it is thus called.

**TARTAR EMETIC**, an antimonial preparation, now called *tartarised antimony*. See **ANTIMONY**.

**TARTAR, VITRIOLATED**, *kali vitriolatum*, the vegetable fixed alkali, saturated with the vitriolic acid. See **KALI**.

**TARTARITES**, are salts formed by the combination of the tartareous acid, with the different alkaline, earthy, and metallic bases; there are twenty-eight species enumerated in

**M. Fourcroy's Elements of Natural History and Chemistry.**

**TARTARISED ANTIMONY**. See **ANTIMONY**.

**TASTE**, that sensation which all things taken into the mouth give particularly to the tongue, the papillæ of which are its principal instruments: but all the diversities of those sensations we are very short of words to express; nor are these distinctions material in this place.

**TAVANUCCO**, or rather **TABANUCCO**, a kind of resin brought from the West Indies.

**TAXUS**, the yew-tree, a genus in Linnæus's botany. He enumerates four species.

**TEATS**, a name popularly given to the *paps* or *dugs* of brute animals. These, in the cow, are subject to *chapping*. See **CATTLE**.

**TECHNICAL** (from *τεχνη*, *ars*, *art*), an epithet used to denote such terms as are peculiar to the rules and documents of particular arts.

**TEETH**, are little bones placed in sockets in an animal's jaw, which serve to facilitate nourishment, by dividing and grinding the food. By these we may distinguish the age of horses. A horse has forty teeth, including the tusks, which are distinguished as already related under the article *AGE of a horse*. The teeth are of a substance harder than any of the other bones, which is absolutely necessary, considering their office is to break and cut all the aliment. That part of a tooth which stands above the gums is smooth, and covered with enamel, but all within the sockets of the jaws is more rough, and covered with a thin membrane of exquisite sensibility.

**TEGUMENT**, or **INTEGUMENT**, the covering of any thing: so the skin is a tegument of the body.

**TEIGNES**, a distemper in the foot of a horse, vulgarly described in the *Russic Dict.* It is said to exist "when the flesh moulders away in pieces, and it goes the length of the quick, for then the itching pain is so great, that it will make the horse halt." See **THRUSH**.

**TEMPERS OF HORSES**. See **DEFECTS** and **FAULTS of horses**, and **VICES in horses**.

**TEMPER**. This, in a horse, is what ought very much to be regarded: because if it be good it very much enhances his value, whereas if it be vicious it exposes him to many accidents. "A fallen ill-conditioned horse," says Gibson, "endangers every one that comes near him; and very often will not spare his best friends. Some are only enemies to men, but with other horses are tractable and quiet. These have not always the most true courage, as I have often observed. They are continually in motion when any one approaches towards



them, expecting to be corrected, and are therefore in a constant state of enmity and defence. Others are quiet and tractable to men, and yet are so mischievous to other horses, that they will scarcely suffer any one to come within their reach. Many of this sort have true mettle and courage, but expose both themselves and other horses to kicks and bruises, which prove troublesome, and sometimes expensive to the owner, whereas a horse of the truest courage is usually the best tempered, loving to his master and keeper, and never shews his mettle completely, but when he is urged on by some noble incentive, as in a chace or running match, where there are other competitors; for when he carries a good horseman, he will then discover a sort of complacency, and seem to act every way in concert with his rider. But the reader will be apt to question, how it is possible for any one to find out the temper of a horse without trial. It must indeed be confessed, that a man who has had but small experience, can know but very little of the temper of a horse, and even those who have had the most experience, can only guess upon a superficial knowledge of a horse, so as sometimes to avoid buying such when they are offered to sale; for some horses are exceedingly shy and subtil, will shew but little of their temper when they are cautiously handled, and yet will take every opportunity to do mischief, as all who have been placed much among horses must have frequently observed. A vicious horse generally lays back his ears close to his poll, though this is not always a sure indication of vice, for some very harmless creatures lay back their ears merely out of ticklishness, or from a playful disposition, but at the same time he puts back his ears will look pleasant with his eyes, and with his mouth catch hold of the crib, whereas a vicious horse at the same time he lays back his ears shows the white of his eyes, and looks sullen and dogged. Some vicious horses have a manifest frown, which they discover at all times, and which gives their countenance such an angry aspect, as will easily enough be discovered by those who have been accustomed to horses. Besides, such horses always stand as it were in a posture of defence, having their heads raised and lofty, and one of their hind legs advanced forwards resting upon the toe, ready to lash out at the first person that offers to come near them; and this may further be observed of a very vicious horse, that he never will give a pleasant look even to the person that feeds him.

"Fear is another ingredient in a horse's tem-

per, that must very much lessen his value. A fearful horse both endangers himself and his rider, more than a vicious horse that has courage. Almost every day affords us instances of people being hurt, and sometimes killed, by starting horses, and many such horses are utterly spoiled, by the accidents their fear exposes them to. Besides, that fear in a horse is hardly ever to be overcome until he grows very old and useless, or when he happens to be continually harassed with travelling, in the constant view of all manner of objects, and even then anything new and uncommon will still revive his natural failing. A fearful horse may be often known at first sight by his startling, crouching, and creeping.

"A horse that is very *hot* and *fretful* is no less to be avoided. But here I would distinguish between an eager horse, that strives to be the first in the chace, the foremost in the field, and one that goes always upon the fret, which is properly what I mean here. The one goes out calmly, and never shews his mettle till a proper opportunity offers. He has those qualities that resemble prudence and courage, the other intemperate heat and rashness. A hot-tempered horse begins to fret the moment he comes out of the stable, and continues in that humour till he has quite fatigued himself, which for the most part soon happens. Such horses are not able to endure much hardship, being for the most part but poor feeders, and when they come to go a journey they soon lose their flesh, have a carrion-like look, and seldom perform it without intervals of rest. They rarely last long, for this temperature exposes them to many accidents and diseases.

"A *dull* phlegmatic horse is the very reverse of one that is hot and fiery, and his qualities are easily known, notwithstanding all the arts of the dealer to put life and spirit into him. A sharp pair of spurs, the frequent cracking of the whip, a stimulus under his tail, will cause him to shew somewhat of mettle, and carry himself to the best advantage; but still any tolerable judge will easily perceive that all his action is forced, and not natural. He moves as if he was in a hurry, and yet with many tokens of heaviness. Nevertheless some such horses are of more real value, and last much longer than those that are hot and fretful, because they are seldom hurt with labour, nor expose themselves much to accidents; and if they prove unfit for the saddle, they may be serviceable for many other purposes." See *BUYING*.

TEMPERAMENT (from *tempero*, to mix together); another term for *constitution*. Dr.

Cullen thinks that the difference of temperaments in the human body may consist,

1st, In the state of the simple solids.

2d, In the state of the fluids.

3d, In the proportion of the solids and fluids in the body.

4th, In the distribution of the fluids.

5th, In the state of the nervous power.

These divisions, for aught we know, are equally applicable to brute animals. In forming, however, our opinions with respect to temperaments, the constituent parts of the animal machine should be considered, particularly those which are possessed of moving powers, as it is on their action that every function of the body, nay even life itself, depends, and probably the very nature of the fluids, not contaminated with any extraneous materials thrown or absorbed into the habit. The *moving powers* of the habit are the *muscular fibres*, and *vascular system*, possessed of irritability; the *nervous system*, of incitability; and the *sanguinary mass of fluids*, of the *vis animans*, and *servans naturam*. Hence, therefore, from these principles, it has been supposed, that temperaments may be formed for the purpose of promoting practical utility, either in preventing or curing diseases in men and other animals.

TEMPORALIS, is a muscle that arises, by a semicircular fleshy beginning, from a part of the os frontis, from the lower part of the parietale, and upper part of the temporale, from whence going under the zygoma, and gathering together as to a centre, it is inserted by a short and strong tendon into the processus coronæ of the lower jaw. This muscle in the horse is shewn in Plate XIV. See the description of parts composing the head, under the article HORSE.

TEMPORALIS ARTERIA, the temporal artery: its origin is covered with the parotid gland. The *temporal vein* accompanies the temporal artery. The latter, in the horse, is shewn in Plate XIX. See the description of parts "In the Head," under MUSCLES.

TEMPORUM OSSA, the bones of the temples. See CRANIUM and BONES.

TENACITY, that property in viscid substances, by which their particles adhere together.

TENACULUM (from *teneo to hold*), a surgical instrument of a crooked shape, the sharp end of which is thrust through the substance intended to be held, as in the case of a divided artery on which a ligature is to be fixed.

TENDO ACHILLIS. In the human subject this tendon is formed by the union of the soleus and gastrocnemius muscles, which are inserted into the os calcis. Some say it is thus named from its action in conducing to swiftness

of pace. Its situation in the horse is shewn in Plate XIII. See the explanation of parts "in the lower limbs," under the article HORSE.

TENDON (from *tendo, to stretch*), is the extremity of a muscle, where its fibres run into a strong shining chord, and this is called the *head* or *tail*, as it happens to be at the origin or insertion of the muscle. When a tendon happens to be divided, there is an operation performed, which is called the *sitching of the tendon*. This is done by laying one end next the other; and so passing a needle and waxed silk two or three times through as to draw them together; dressing the surface of the wound with the ointments proper for simple wounds. *La Fosse* says, "the rupture of the tendo Achillis is cured by compress and a bandage dipt in vinegar or verjuice, only keeping the extremities of the tendon in close contact: this is greatly favoured by binding the fetlock, and keeping it in that position by a splint externally applied, so that the foot cannot bend outwards."

Mr. FERON gives a very different account of the result of this accident. He says that he has seen different instances of a complete rupture of the tendons or back sinews. "This," says he, "may appear contradictory to those persons who are not anatomists. Nevertheless, it is easy to conceive, that if a horse set his foot, or place his leg, in a wrong direction, at the instant he makes a violent effort, and directs all his force on the lower insertion of the tendon, this latter part may suddenly break, or separate from the bone of the foot, where it is strongly inserted; while the rest of the tendon, and even the muscles, will not suffer the smallest degree of extension. The following experiment will most likely render the reader sensible how this can be done.

"If, for instance, you employ a sudden degree of force upon a fixed point of an extended rope, it will undoubtedly break at that point, though the opposite side of the rope will hardly feel the smallest effect from it. Moreover, the strings of a harp or piano-forte, for example, will get up to the pitch very easily, will stand there for many months without breaking, and will allow to be stretched gradually much higher. But if you give a sudden turn to the screw that moves the string, it will break instantly at one of its fixed points, but never, or very seldom, at any other place.

"If, however, the back-sinews happen to be broken, and the accident well ascertained, the animal must be dispatched as soon as possible, in order to save both trouble and expence. *To attempt such a cure would be a real sign of ignorance.*



“ The symptoms of this accident are very easily discovered, by the impossibility of bending the leg backward, on account of the flexor muscles having lost their fixed point; and the sinews are found considerably slack, from the knees down to the pastern, &c. But this accident happens rarely.”

TENESMUS (*τενεσμος*), is a continual inclination of going to stool, caused by the irritation of sharp humours on the rectum.

TENSION, expresses a stretching out, as of the fibres or membranes in certain circumstances.

TENT, a kind of plug of lint, or tow, rolled up in the form of a solid wedge, for the purpose of being thrust into a small aperture in a sore; with a view either to dilate it gradually, or to prevent its closing prematurely. For dilatation, bits of sponge are used dipped into a melted composition of rosin, wax, and oil, in proper proportions, and strongly pressed between two iron plates, so as, when cooled, to retain their compressed form. See the article WOUNDS.

TEREBINTHINÆ, turpentine, are resinous juices extracted from certain trees. There are four kinds of turpentine distinguished in the shops. Of these, the following only are employed for veterinary purposes.

1. TEREBINTHINA COMMUNIS, *Common turpentine*, is the coarsest and heaviest, in taste and smell the most disagreeable, of all the sorts: it is about the consistence of honey, of an opaque brownish white colour.

This is obtained from the wild pine, a low unhandsome tree, common in different parts of Europe; this tree is extremely resinous, and remarkably subject to a disease from a redundancy and extravasation of its resin, inasmuch, that, without due evacuation, it swells and bursts. The juice, as it issues from the tree, is received in trenches made in the earth, and afterwards freed from the grosser impurities by colature through wicker baskets.

2. TEREBINTHINA VENETA, *Venice turpentine*. This is usually thinner than any of the other sorts, of a clear, whitish, or pale yellowish colour, a hot, pungent, bitterish, disagreeable taste, and a strong smell, without any thing of the fine aromatic flavour of the Chio kind.

The true Venice turpentine is obtained from a large tree growing in great abundance upon the Alps and Pyrenean mountains, and not uncommon in the English gardens. What is usually met with in the shops, under the name of Venice turpentine, comes from New Eng-

land. Of what tree it is the produce, we have no certain account: the finer kinds of it are in appearance and quality not considerably different from the true sort above described.

3. OLEUM TEREBINTHINÆ, *Oil of turpentine*. Both the forementioned juices yield this in distillation with water. It is an highly penetrating essential oil, which leaves a brittle insipid resin. It is of great use as a veterinary remedy. With regard to the medical virtues of the turpentine, given internally, they promote urine, cleanse the parts concerned in the evacuation of it; and at the same time, like other bitter hot substances, strengthen the tone of the vessels. They have an advantage over most other acrid diuretics, since they gently loosen the belly. Venice turpentine, triturated with the yolk of an egg, and diffused in water, may be employed in the form of an injection, as a good laxative in colics, and other cases of obstinate costiveness. They are principally recommended in gleets, and by some also they are considered useful in calculous complaints.—Where a calculus is formed, however, they can do no service, but only irritate or inflame the parts. In all cases accompanied with inflammation, they ought to be abstained from, as this symptom is increased, and not unfrequently occasioned by them. It is observable, in the human subject, that the turpentine impart, soon after taking them, a violet smell to the urine; and have this effect, though applied only externally to remote parts.

The common turpentine, and sometimes rosin, are given internally (see DIURETICS); but its principal use is in plasters and ointments. Venice turpentine is often employed instead of the common, as a purer article. But the oil (or *spirit* as some call it) is most important as a rubefacient, for its effect on the skin of the horse and other quadrupeds is very considerable, and the stimulus it produces very violent. Hence, in internal inflammations, it is extremely useful to irritate the skin by means of this remedy, the action of which approaches that of a blister, when much friction is used. See OILS.

TERES, signifying any thing long and round, is a name given to a worm thus shaped, which is bred in animal bodies. See WORMS.

TERES LIGAMENTUM, the round ligament, rises from the bottom of the cavity of the acetabulum, and runs obliquely, to be inserted into the head of the os femoris. It serves to confine the rotation of the thigh. This is found both in the human subject and in many quadrupeds.

**TERES MAJOR.** This muscle in the human subject rises from the outer part of the lower corner of the scapula, passes to the os humeri forwards, and, joined by the latissimus dorsi and its tendon, is inserted into the posterior ridge of the biceps groove, to bring the arm downwards, backwards, and inwards to the body. This muscle in the horse is shewn in Plate X. See the description of parts "*in the shoulder,*" under the article HORSE.

**TERES MINOR,** also called *brevis* and *transversalis*. It rises from the lower costa of the scapula, and runs with the infra spinatus, and is inserted with it also. See Plate XIII. and the description of "*the shoulders and trunk,*" under HORSE.

**TERETES, or EARTHWORMS,** one of the three sorts of worms, which infest the bodies of horses. See the articles WORMS, ASCARIDES, and BOTS. The earth-worms in horses resemble the common earth-worms in many respects, only that they are sharper at both ends, callous towards the middle, and do not so easily contract or dilate themselves. Some of these, which have been seen to come from horses, hinder them from thriving till they are dislodged by medicine.

**TERNARY,** consisting of the number three, which some modern chemical writers use to denote compounds consisting of three parts, or elements united by attraction.

**TERRA A TERRA,** in the manege, a series of low leaps, which a horse makes forwards, bearing side-ways, and working upon two treads. In this motion, a horse lifts both his fore-legs at once; and when these are upon the point of descending to the ground, the hinder legs accompany them with a short and quick cadence, always bearing upon the haunches; so that the motions of the hinder-quarters are short and quick; and the horse being always well pressed and coupled, he lifts his fore-legs pretty high, and his hinder legs keep always low, and near the ground. This manege is called *terra a terra*, because in this motion the horse does not lift his legs so high as in coveys.

**TERRAIGNOL,** in the manege. A horse so called, is one that cleaves to the ground, that cannot be made light upon the hand, that cannot be put upon his haunches, that raises his fore-quarters with difficulty, that is charged with shoulders, and, in general, one whose motions are all short, and too near the ground.

**TERRAIN,** in the manege, is the maneged

ground upon which the horse marks his tread. It is said "This horse observes his ground well."

**TERRIER,** a kind of mongrel greyhound, used chiefly for hunting the fox or badger. He is so called, because he creeps into the ground as the ferrets do into rabbit-burrows, and there attacks the fox or badger; either tearing them in pieces on the spot, or else hauling them by force out of their lurking holes; or at least driving them out of their hollow harbours, so that they may be taken by a net, or other contrivance of that kind. Sportsmen have commonly a couple of terriers with them, to the end they may put in a fresh one, as occasion serves, to relieve the other. The time proper for entering terriers is, when they are near a year old.

**TERTIAN, *Tertiana Febris,*** an ague or tertian fever, intermitting but one day, so that there are two fits in three days. In the *Tertiana Duplex*, two paroxysms occur every third day, or two every day. *Tertiana Triplex* is a tertian fever, returning every day: every other day there are two paroxysms, and but one on the intermediate one.

**TERTIUM QUID,** a phrase invented by the old chemists to express that result of the mixture of two things, which forms somewhat very different from both.

**TESTACEOUS,** a term given only to such fish whose strong and thick shells are entire and of a piece; those which are joined, as the lobsters, &c. being called *crustaceous*. In medicine, all preparations of shells and substances of the like kind were thus called heretofore; but now they are of no estimation.

**TESTES CEREBRI.** See BRAIN and QUADRUPED.

**TESTICLES.** These, in a horse, are seated in a scrotum, which takes its origin and growth from the external parts. The testicles are glandular, their use being to prepare the seed for procreation, which is carried by proper vessels into the vesiculæ seminales, where it remains till the time of coition, when it finds a passage into the urethra. They have four coats, and have proper veins and arteries which communicate with those of the kidneys.

**TESTUDO,** a little tumour called a *mole*. It is a species of wen.

**TETANUS** (*τετανος*, from *τείνω*, to stretch), a tetany. There are several modes of this spasmodic disease, the principal are the *tetanus*, i. e. when the body is rigidly held in an upright manner; the *emprosthotonos*, i. e. when the body



is rigidly bent forward; the *opisthotonos*, i. e. when the body is rigidly bent backward; the *pleurosthotonos*, i. e. when the body is rigidly held to one side; the *trismus*, i. e. when the under-jaw is so drawn towards the upper, that the mouth cannot be opened: this last is called the *locked-jaw*. (See LOCKED-JAW.) Dr. Cullen places the tetanus as a genus of disease in the class *Neuroses*, and order *Spasmi*; and defines it to be, a spastic rigidity of almost the whole body.

**TETHER**, a rope wherewith the leg of a horse is tied that he may graze within a certain compass only.

**TETTER**, called by farriers the flying-worm, or ring-worm. It runs up and down the skin in different directions, from whence it receives its name. It is most commonly found on the rump, and runs down the joints of the tail; and if neglected is said to turn into a canker. It will now and then settle upon some fleshy part of the body, which will be attended with so troublesome an itching, as to make the horse rub against walls and posts, till he will bring away the hair and skin, and even tear his flesh with his teeth, if he can come at it. After all, however, this disease differs little, if at all, from the mange, and is to be cured by similar means. See MANGE.

**TEUCRIUM**, germander, a genus in Linnaeus's botany. Of species, he enumerates thirty-five.

**THALAMUS**, signifies a bed, whence, in anatomy, some parts are distinguished by it, having resemblance thereunto in their office: as, *Thalami Nervorum Opticorum*. See BRAIN.

**THECA**, signifies any case or covering; whence botanists apply it to some parts of particular flowers, and Hildanus uses it for a case for surgical instruments.

**THEOREM** (*θεωρημα*), a proposition upon any subject that is demonstrable, differing from a problem in this, that it barely asserts a thing to be proved; whereas a problem supposes some data, then requires them to be put together, and lastly, asserts the thing required to be done, which is to be proved by the demonstration.

**THEORY** (from *θεωρεω*, *contempler*, to contemplate), is the speculative part of any science that directs to the rules of practice. Many delusions have resulted to medicine from an indulgence in speculations and fanciful theories. Modern philosophers, however, are convinced of the necessity of experiment and patient observation, in all cases where the foundations of any science are to be laid. See MEDICINE.

**THAPSUS**, great white mullein, high taper, or cow's lung-wort, a species of VERBASCUM.

**THERAPEUTIC** (from *θεραπεω*, *sano*, to make well), that part of physic that respects the prescription of medicine, or the method of cure. See MEDICINE. Therapeutics furnish the *Materia Medica* its preparations and manner of giving them.

**THERIACA**, probably from *θηρ*, *fera*, a beast, and *ακεραι*, *sano*, to cure, because it is applied to such things as are chiefly calculated for curing the bites of poisonous animals. It was first given to the celebrated composition of Andromachus, which, till of late years, was one of our officinal remedies. Writers, however, afterwards ascribed it to many other medicines of the like form and virtues, but now the term is done away altogether.

**THERMÆ** (*θερμαι*, from *θεωμαινω*, *calefacio*, to make warm), hot baths. See BALNEUM.

**THESIS** (*θεσις*), any short sentence or subject taken to discourse or dispute upon in the schools, prior to the conferring degrees of physic, &c.

**THIGH**, that part of a horse which reaches from the huckle or whirl-bone to the stifle or knee-pan. It is moved by several muscles. Three bend the thigh forwards, or lift it upwards, as when the stifle is raised towards the belly; and three draw it backwards. The thigh is also turned inwards by one muscle, which has several origins, and is turned outwards by four muscles. The first of the flexors of the thigh rises from the transverse processes of the lowermost vertebræ of the chest, below the withers, and two or three uppermost of the loins, and is inserted by a strong round tendon into the fore-part of the lesser head of the thigh-bone. The second rises from the share-bone, and is also implanted, by a strong round tendon, into the lesser head of the thigh-bone, near the stifle. The third, and all the other muscles of the thigh, except the two last that turn the thigh obliquely, have their origins from the hip-bones, rump, and os sacrum; some from their outides, others from their insides, some from a higher or more distant derivation, and some have a nearer origin, and are all inserted either immediately above the stifle, or at the very extremity of the thigh-bone. The insertion of these muscles being more at the extremity of the thigh-bone in a horse than in man, seem the more necessary, because by this means they are able to move a greater weight, and lift the thigh higher, than if their insertions had been more upwards into the neck of that

bone. Besides, the thigh-bone of a horse is much shorter in proportion than in man, and therefore requires this sort of mechanism in the insertion of these muscles, to perform all the ordinary motions of the thigh. These compose the fleshy part of the hip, especially those that answer to the *gluteus externus*, *internus*, and *medius*, and some of them have very strong fibres, and pass over the whirl-bone and hip joint, to which they are a very great security. The last pair that turn the thigh obliquely, rise the one from the outer circumference of the hole of the ischium, and the other from the inner circumference, and are both inserted near the great rotator of the thigh, being like a stay to prevent any irregular motions in the other muscles. For a view of these muscles, see the plates annexed to the articles *MUSCLES*, *HORSE*, &c.

**THIRST**, that sensation produced in the organs of taste in animals which indicates the want of fluid aliment. The cause is probably in the stomach, though the uneasiness is in the mouth, and there is a great deficiency in the secretions of the salivary and other glands. Thirst is a symptom in some diseases, particularly in fevers. It is assuaged, in common cases, by water (see *WATERING*); but when it is a symptom of disease, the relief is more considerable, when acids are added to it in small proportion. For some useful cautions in giving water to horses, see the article *EXERCISE*.

**THLASIS** (*θλασις*), a depression of a bone in the skull.

**THORA HELVETIANA**, crow-foot, a species of *ranunculus*.

**THORACIC DUCT**. See *LACTEALS*.

**THORAX**. See *CHEST*.

**THORN**. The skin and flesh in all animals are exposed to injury by puncture from thorns. See the articles *PRICKING*, *PUNCTURE*, and *WOUNDS*. If a thorn is found in a part, it must either be carefully drawn out by a pair of sharp-pointed forceps, or a small incision must be made into the skin so as to enable the operator to dislodge it; and the sooner this is done after the accident the better, as it will be rendered much more difficult when the inflammation, always consequent on the violence done to the part, is come on. Where it cannot be removed, suppuration in the part must be encouraged by emollient poultices, &c. See *POULTICE*.

**THROMBUS** (*θρομβος*). When a vein is opened, sometimes the blood is insinuated into the cellular membrane about the orifice, so as to

form a tumour, which when small and round, is thus named.

**THRUSH**. In this disease, there is, in the foot of a horse, an inflammation of the sensible frog, occasioned either by contracted heels, the want of cleanliness in the part, or shoeing on erroneous principles; but most frequently the last. See *SHOEING*.

The thrush may be known by a tenderness felt on pressing the frog, which is also accompanied with a discharge of matter.

The cure consists in removing the shoe, and lowering the heels, so much as that the frog may come in contact with the ground. After which the horse should stand without shoes for several days; and the part should be washed two or three times a-day with a brush and soap lather, and afterwards dressed with the following ointment, recommended by Mr. Denny:

Take of Vitriolated zinc,  
Armenian bole,  
Alum, of each, in powder, one ounce;  
Tar, sufficient to form an ointment.  
Mix.

We are to apply this on lint between the cleft of the frog, and renew it occasionally.

"All the diseased parts," says Mr. Denny, "should be removed with the drawing-knife. If the animal be not allowed rest, bar-shoes must be applied until the disease is removed. If there be much inflammation, we may take away three or four pints of blood, and give a mash, with nitre, every evening. A rowel may likewise be placed in the chest, and continued for two or three weeks. A diuretic ball (see *BALL*) may be occasionally given, and the foot fomented in warm water, in which a handful of salt is dissolved, previous to the use of the dressings."

If the disease proceed from contracted heels, the only certain remedy is the use of the *artificial frog* invented by Mr. Coleman. See *FROG*.

**THURIS CORTEX**, also called *eleutheria*, *cascarilla*. It is plentiful in the Bahama islands, particularly in one called *Eleutheria*.

**THURIS LIGNUM**, i. e. *RHODIUM*.

**THUS**, frankincense. See *FRANKINCENSE*.

**THYME**, the *Thymis vulgaris* LINN. The leaves of this plant, which is frequent in our gardens, and flowers in June and July, have an agreeable aromatic smell, and a warm pungent taste; which are imparted by infusion to recti-



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fied spirit, and sent over in distillation with water. Along with the water arises an essential oil, extremely hot and pungent. It differs little from *origanum*, and may be put to the same use. See the article OILS.

**THYMICÆ.** The arteries and veins of the thymus gland are thus named.

**THYMION** (*θυμιον*), a small wart rising upon the skin somewhat slender, but flat; yet hard and rough at the top. The worst kind are those which are apt to bleed.

**THYMUS.** See CHEST.

**THYO-HYOIDÆUS**, the same as **HYO-THYROIDÆUS**. See the latter.

**THYREO-ARYTENOIDÆUS** (from *θυρεος*, *scutum*, a helmet, *αγοραινα*, an ewer, and *ειδος*, *forma*, *shape*), a muscle of the larynx, thus called from its shape and office, as it assists in opening the wind-pipe, and drawing in air. See LARYNX.

**THYROID CARTILAGE.** See the article LARYNX: also Plate XI. and the description of parts composing "*the neck*," under the article HORSE.

**THYROIDES** (from *θυρεος*, *scutum*), are glands of the LARYNX, which see. See also Plate X. and the description of parts "*in the neck*," under the article HORSE.

**TIBIA**, the inner and larger bone of the leg in the human subject. In the horse, its situation is shewn in Plate V. See the description of "*the lower limbs*," under the article BONES.

**TIBIALIS, MUSCULUS.** Of this name there are two muscles, the *anterior*, which arises fleshy from the upper and fore-part of the tibia, and adhering to the external side of the tibia as it descends, it passes under the ligamentum anulare, and is inserted into the os cuneiforme, which answers to the great toe; and the *posticus*, which arises from the superior and back part of the tibia and fibula, and the membrane that ties them together; and descending by the hinder part of the tibia, it passes through the fissure of the inner ankle, and is inserted into the under-side of the os naviculare: this moves the foot inwards, and the former bends it forwards. For both these muscles in the horse, see Plate X. and the description of parts in the "*right*," and "*left lower limbs*," under HORSE.

**TIBIALIS ARTERIA.** As the poplitea ends, it divides into two principal branches, the first of which runs between the head of the tibia and fibula, passing from behind forwards on the interosseous ligament, whence it is called *tibialis anterior*: the second branch divides into two more, the largest of which is the innermost,

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and is called *tibialis posterior*. In Plates XIV. and XV. this artery is shewn as it exists in the horse. See the description of muscles, &c. "*in the lower limbs*," under HORSE.

**TIBIALIS VENA**, accompanies its respective artery of course. See TIBIALIS ARTERIA; also Plate XV.

**TIC, or TYKE.** See RICINUS.

**TICK, or CRIB-BITING.** See the article CRIB-BITING.

**TICKLISH**, in the manege. A horse is said to be *ticklish*, that is too tender upon the spur, and too sensible; and that does not freely fly from the spurs, but in some measure resists them, throwing himself up when they prick his skin.

**TIME**, in the manege, is sometimes taken for the motion of a horse that observes measure and justness in performing a manege; and sometimes it signifies the interval between two of his motions. In the manege of a step and a leap, the horse makes by turns a corvet between two caprioles; and in that case the corvet is one time that prepares the horse for the caprioles. The times observed in making a stop, are nothing but so many falcades.

**TIN**, a genus in the class of metals. It is an imperfect metal, of a whiteness approaching to that of silver, very malleable, and readily extensible under the hammer; it hath less ductility than gold, silver, or copper; yet it has enough to allow of its extension into very thin leaves. It has little or no elasticity. A tin-wire, one-tenth of an inch diameter, supports a weight of forty-nine pounds and a half, without breaking. Tin is scarcely at all sonorous when pure; it is the lightest of all metals: if rubbed between the hands, exhales a disagreeable odour peculiar to itself, and has a taste not less disagreeable: when bent, it makes a little crackling noise, as if it were breaking. This metal, granulated, is employed in medicine as an anthelmintic.

**TIN FLOS**, a genus in the order of cryptometalline floses. All the species have a glossy appearance, and are frequently found in different kinds of figures: some of them are transparent, and others are opaque: the individuals are mineralized with arsenic.

**TINCÆ OS**, a name given to the mouth of the womb in a woman, from its supposed resemblance to a *trench's mouth*.

**TINCTURE** (from *tingo*, to dye), any coloured solution of animal or vegetable matters in vinous or spirituous menstrua.

**TINEA CAPITIS**, scalled head. This and

the *crusta lactea* are commonly described as distinct and unconnected diseases in the human subject. How far these diseases are to be traced in brute animals remains to be ascertained.

TINEAL and TINCAL, i. e. borax. See BORAX.

TIT, a little horse or nag. Some call a horse of a middle size a double tit.

TITILLARES, VENÆ, the iliac veins.

TITILLATION, a sensation of pleasure from the touch of some parts, but chiefly of those concerned in generation.

TOBACCO. See NICOTIANA.

TOE, in brute animals, the extreme fore part of the foot. The same portion of any thing attached to the foot acquires the same name from its relation. Thus we not only speak of the *toe of the foot*, and the *toe of the hoof*, in the horse, but also of the *toe of the shoe*. The point of the frog is also called the *toe of the frog*.

TOES. These, in the human subject, are made up of fourteen bones. The great toe has two, and the rest have two each: they are like the bones of the fingers, but shorter. In the toes are found twelve ossa sesamoidea, as in the fingers. These parts differ in different brutes that have them. In the horse, the extreme point of the crust is called the *toe of the hoof*, &c. See TOE.

TOLUTANUM BALSAMUM, the balsam of Tolu; a resinous juice, flowing from incisions made in the bark of a tree, of which we have various accounts: it is the *Toluifera Balsamum* LINN.

STONE (from *τονωω*, to strengthen). Every vessel, membrane, and muscle, with every fibre in the sensible parts of an animal body, have a natural tendency to shorten themselves, and this is their tonic power. Hence, by the word *tone*, applied to the system, we mean the strength and activity of the moving powers of the constitution; and, to medicines, all such are considered as *tonics* which increase the action and firmness of the solid parts of the machine; and are, therefore, something more than astringents, though used by some authors synonymously in that sense. Bark, iron, and some other minerals, are reckoned *tonic* remedies.

TONGUE, that member of an animal which is situated in the mouth, which acts a principal part in mastication, as it forces the food between the grinders, and assists also in the act of deglutition, which could not be performed without it. It performs also some subordinate offices of great use to brute animals, as licking their coats, &c.

The tongue is itself a muscular substance,

made up of fibres variously combined together, and in such a manner as may best suit and correspond with all its different motions. The tongue has five pair of muscles that are proper to it alone, and two pair that are common to it and the bone called the os hyoides. See HYOIDES. Some of these muscles rise from the latter, and others from the lower jaw. Those that rise from this bone, have their insertions into the apertures of the lower jaw-bone. One pair, that pull the tongue backwards, arise from the temporal bones, and are inserted into the sides of the tongue; and another pair from the lower jaw, near the furthestmost grinding teeth, are inserted into the ligament or bridle of the tongue; by which means they are suited to all its various motions. The muscles common to the tongue and os hyoides, act chiefly in concert with the others, and give the tongue such motions as forward the aliment into the gullet, when it is sufficiently chewed, and prepared to pass into the stomach. Wounds, cankers, or other affections of the tongue in horses, are, for the most part, easily cured, when proper applications are made use of. Tincture of myrrh and Ægyptiacum form a suitable application in some of these cases.

TONIC. See TONE.

TONIC SPASM. In a morbid state, the contractions of the muscular fibres, or of the muscles, are involuntary, and are excited by unusual and unnatural causes, when the contractions are to a violent degree, and are neither succeeded by a spontaneous relaxation, nor readily yield to an extension, either from the action of antagonist muscles, or from other extending powers applied. This state of contraction is what has been called *tonic spasm*, and what may be named strictly and simply a *spasm*.

TONSILS, or, as they are popularly called, ALMONDS, are two round or oval glands placed on the sides of the basis of the tongue, under the common membrane of the fauces, with which they are covered. Each of them has a large oval sinus, which opens into the fauces, and in it there are great numbers of smaller glands, which discharge a mucus into the fauces, larynx, and œsophagus, for moistening and lubricating those parts. When the œsophagus acts, it compresses the tonsils.

TOPHUS. See GUMMA.

TOPICS (τοπικα, from *τοπος*, locus, a place, or part), are such remedies as are externally applied to any particular part.

TORCHENESS, in the manege, a long stick with a hole at end of it. Through this runs a strap of leather, the two ends of which,



being tied together, serve closely to tie up a horse's nose, as long as the stick is kept upon the halter or snaffle. This is done to keep the horse from being unruly when dressed, or upon any other occasion.

**TORMENTILLA**, septfoil, or tormentil, a genus in Linnæus's botany. He enumerates two species. The college have retained the root of the *tormentilla erecta* LINN. in their Pharmacopœia: it is an ingredient in the Pulvis e Creta Compositus.

**TORMINA**, is used to express pains of any kind, according to the differences of parts, or symptoms, and is variously distinguished. But in a more particular manner we express the gripes, by *tormina ventris*.

**TORPOR**, a diminution of sense and motion in a fleshy part.

**TORTICOLLIS**, a kind of contraction, by which the neck is bent to one side.

**TORTIO**, a strain in a joint.

**TOUCH-ME-NOT**. See *NOLI ME TANGERE*.

**TOXITESIA**, mug-wort. See *MUGWORT*.

**TRACHEA**. See the article *ASPERA ARTERIA*: also Plate XI. and the description of parts "in the neck," under *HORSE*.

**TRACHEALIS**, belonging to the trachea, or windpipe. Thus the *arteria* and *vena trachealis*, are blood-vessels of that part.

**TRACHELO-MASTOIDÆUS** (from *τραχηλος*, *collum*, its chief origin being from the vertebræ of the neck). This, in the horse, is shewn in Plate XIV. and the description under *HORSE*.

**TRACHOMA** (*τραχωμα*, from *τραχυς*, *rough*). In Cullen's Nosology, it is a variety of the *Ophthalmia Tarsi*.

**TRACHEOTOMY** (from *τραχηλος*, and *τεμνω*, *feco*, to cut); the making an opening into the trachea. This operation is also called *bronchotomy*, and *laryngotomy*, and is made, in the human subject, by incision, or by puncture, betwixt the third and fourth ring of the trachea; or, if this place cannot be chosen, the opening is made a little lower. When the skin is cut through, a small incision is made into the wind-pipe, and then a short but crooked canula fixed for the air to pass through. This operation is seldom performed on brute animals, though some cases may require it.

**TRAGACANTHA**, goat's-thorn, a species of *astragalus*. The college have retained the gum tragacanth in their Pharmacopœia; it enters the Pulvis e Tragacantha Compositus, and some other formulæ. They have also directed a solution called Mucilago Tragacanthæ.

**TRAGOPOGON**, goat's-beard, falsafy, a genus in Linnæus's botany. He enumerates fourteen species.

**TRAMEL**, or **TRAMMEL**, in the manege, a machine or contrivance for teaching a horse to amble. See the article *AMBLE*. In books on this subject it is directed to be formed after the following manner: 1. "The side-ropes must be made of strong pack-thread, twisted into a delicate strong cord, about the thickness of a small jack-line, with a noose or loop at each end. They should not be twisted too hard, but gently, and with an elastic quality, which will prevent the tramel from breaking. These side-ropes must be, in length, thirty-six inches, for a horse of an ordinary stature; and either longer or shorter, according to his size, and quite equal one with another. 2. *Hose* must be placed on the small of the fore-leg, and the small of the hinder-leg above the pastern-joint; and these must be made of fine girth web, that is soft and pliant, and joined with double cotton. Over the girth-web must be fastened strong tabs of white near's-leather well tallowed, suited to an equal length, and stamped with holes at equal distances, which may pass through the nooses of the side-ropes, and be made longer or shorter at pleasure, with very strong buckles. These hose are also to be made fast about the horse's legs, with small buckles, and the hose of the girth should be four inches in length, and the long tabs with the large buckles ten inches. 3. The *back-band*, which is for no other use but to bear up the side-ropes, should, if you tramel all four legs, be made of fine girth-web, and lined with cotton; but if you tramel only one side, then a common tape will serve, taking care that it carries the side-ropes in an even line, without either rising or falling: for if it rises it shortens the side-rope, and if it falls there is danger of its entangling.

"To use the tramel, bring the horse into a smooth path, and being made fast about his legs, untie the long tabs of his near fore-leg and near hinder-leg; then put the side-rope to them; and take care that the horse stand at that just proportion which nature has formed him in, without either straining or enlarging his limbs, and in that even and just length, stay the side-rope by the small tape fastened up to the saddle; then with your hand on the bridle, straightening his head, put him gently forward, and (if there be occasion) let another person put him forward also, and so force him to amble up and down the road with gentleness, suffering him to take his own time, that he may come to

understand his restraint, and what motion you would have him perform. If he should stumble, or perhaps fall now and then, yet do you only stay his head, give him leave to rise, and put him forwards again gently, till the horse, finding his own fault, and understanding the motion, will become perfect, and amble in hand very pleasantly.

“To effect this with more ease to the horse, it may not be amiss to give the side-ropes more length than ordinary at his first tramelling, both that the twitches may be less sudden, and the motion coming more gently, the horse may sooner apprehend it. But, as soon as he is arrived at any perfection in the pace, put the sides to their true length; for an inch too long is a foot too slow in the pace; and an inch too short will cause rolling, a twitching up of the legs, and, indeed, a kind of downright halting. When the horse will thus amble in hand perfectly with the tramel on one side, you may then change it to the other side, and make him amble in hand as before; and thus repeat it, changing from one side to another, till, with this half-tramel, he will perform readily and swiftly.

“Having attained to this, which may be effected in two or three hours’ labour, if there be any tractableness in the horse, put on the whole tramel, with the broad flat back-band, tramelling both sides equally, and so run him in hand, at the utmost length of the bridle, along the road, several times; then pause and cherish him, and ply him thus till you have brought him to amble completely.

“When this is the case, put him upon uneven ground, as up and down hill, where there are roughnesses, hollownesses, and false treading. When perfect in hand upon all these motions, set a boy or groom upon his back, making him amble, while you hold his head to prevent danger. Afterwards mount him, and with all gentleness increase his pace more and more, till he become perfect; and as you did before with him in hand, so do now on his back, first with the half-tramel, then with the whole, changing the tramel often from one side to the other; and also changing the ground, which should be done two or three times a-day.

“When you have brought the horse thus to perfection, you may lay aside the tramel, and ride him without it; but do this in a highway, and not in a private smooth road, which affords but a deceitful pace, that will be left upon every sensation of weariness; therefore pace him on the highway three or four miles in a morning; and in case you find him forsake

his gait from any cause, always carrying the half-tramel in your pocket, alight and put it on; and thus continue to exercise him, giving him ease now and then, and at last bring him home in his true pace.”

**TRAMELLED.** In the manege, a horse is said to be tramed that has blazes or white marks upon the fore and hind feet on one side, as the far-foot before and behind. He is thus called from resemblance of the white foot to the hose of a half-tramel. A *cross-tramed* horse is one that has white marks on two of his feet, that stand crosswise, like St. Andrew’s crosses; as in the far fore-foot, and the near hind-foot; or in the near-foot before, and the far-foot behind.

**TRANCHEFILE**, in the manege, the cross-chain of a bridle that runs along the bit-mouth from one branch to the other.

**TRANSFUSION** (from *trans*, *through*, and *fundo*, *to pour*), is chiefly used for the letting the blood of one animal out, so as to be immediately received by another. Some instances favourable to this practice are cited under the article **RESUSCITATION**.

**TRANSMUTATION** (from *trans*, *through*, and *muto*, *to change*), has been a term much used amongst alchemists for the changing one metal into another; but such pretensions are now only laughed at.

**TRANSPIRATION** (from *trans*, *through*, and *spiro*, *to breathe*), the same as **PERSPIRATION**, which see.

**TRANSVERSALIS ABDOMINIS**, a muscle that lies under the obliqui, and arises from the cartilago xiphoides, from the extremities of the false ribs, from the transverse apophyses of the vertebræ of the loins: it is fixed in the inner side of the spine of the ilium, and is inserted into the os pubis, and linea alba. This, with the *Oblique* (which see), unites its tendons as it approaches the linea alba, and is the only muscle that is cut in the operation for the bubonocèle: it has a fine and thin membrane that closes exactly its ring or hole through which the vessels pass. This muscle in the horse is shewn in Plates X. and XV. See the description of muscles “*in the trunk*,” under the article **HORSE**.

**TRANSVERSALIS NASI.** These muscles run from the upper part of the upper lip to the ridge of the nose.

**TRANSVERSALIS ANTICUS.** That distinguished by the epithet *primus* is situated between the basis of the occipitis and the transverse apophysis of the first vertebra of the neck. The *transversalis anticus secundus* is fixed



near the middle of the transverse apophysis of the second vertebra of the neck by one end, and by the other near the basis of the first.

**TRANSVERSALIS CERVICIS**, or **TRANSVERSALIS COLLI**, is a part of the muscle called *Transversalis Dorsi*. Some make three of this muscle, viz. the *Sacer*, the *Semispinatus*, and *Transversalis Colli*. It arises from the os sacrum, and from all the transverse processes of the vertebræ of the loins, back, and neck, except the two first, and is inserted by so many distinct tendons into all their superior spines. It moves the whole spine obliquely backwards. This muscle is shewn in Plate XX. See the description of parts "*in the neck*," under **MUSCLES**.

**TRANSVERSALIS PENIS**, arises from the ischium, just by the erectores, and runs obliquely to the upper part of the bulb of the urethra. It helps to press the veins upon the back of the penis against the os pubis, which is the cause of erection. See Plate XXII. and the description of parts "*in the lower limbs*," under **MUSCLES**.

**TRANSVERSALIS URETHRÆ**, is a digastric muscle: its two extremities are fixed in the branches of the ossa pubis.

**TRAPEZOIDES OS**, the second bone in the second row in the human wrist.

**TRAPEZIUM**, is a species of quadrangle, consisting of four unequal sides. Thence the name of a bone, in the horse, which is shewn in Plate V. See the description of parts "*in the upper limbs*," under **BONES**.

**TRAPEZIUS**, a name given to the muscle otherwise called *Cucullaris*, from its resemblance in shape to a monk's hood. This, in the horse, is shewn in Plate VI. See the article **EXTERIOR**.

**TRAVE**, or **TRAVICE**, is a small inclosure or oblong quadrangle, placed before a farrier's shop, and consisting of four pillars or posts kept together by cross poles; the inclosure being designed for holding and keeping in a horse that is apt to be unruly in time of shoeing, or of any necessary operation.

**TRAVELLING**, the performing of a journey, which is frequently done on horseback. Under the article **MANAGEMENT**, we have given some valuable instructions, with regard to the treatment of a horse when on a journey, extracted from Mr. WHITE's useful publication; yet we are nevertheless tempted, on account of the great importance of the subject, to present the reader with another, and somewhat different, view of "*the management of horses when travelling*," as given by Mr. Clark, of Edinburgh.

"It ought always to be remembered," says that accurate writer, "that when a horse is

intended for a journey of any length, and the prospect of *continuing it for some time*, that he be properly prepared for it, by good feeding, and that he have been *in the practice of regular and daily exercise* (see **EXERCISE**). Without a due proportion of the latter, no horse can undergo any fatigue, without danger of being laid up by some acute disease; for which reason, it will be obvious, that a horse which is too fat, or full of flesh, or that has been kept long on soft feeding, or newly from the hands of a dealer, or running late at grass, or that has been accustomed to stand much at rest in the stable, or that may be too low of flesh, and exhausted by former fatigue, in consequence of disease, or from old age, can be fit for this purpose. Neither are too young horses fit for a journey, especially when about casting their foal-teeth, or before their strength is confirmed, and their bodies seasoned by habitual labour or exercise. On the other hand, a horse that is rather meagre than fat, and whose flesh is firm from good feeding, and in the habitual practice of undergoing active exercises of labour, has always the best chance of performing a long journey with ease to himself, and with satisfaction to his rider.

"For the ease of the horse, as well as for the safety of the rider, it is proper to attend particularly to the saddle, and to be certain that it fit the horse's back properly. It must neither be too wide in the trees, so as to press forward on the shoulder-blades, nor too narrow, so as to pinch and bruise the skin. The bolstering or stuffing in the pannel must be adapted to the hollow spaces on each side of the spine or ridge of the back; so that it may lie smooth and equal on every part, the spine excepted, which it ought not to touch at all, or come near, either on the fore or back part. If thus properly fitted, there will be no occasion for a crupper, unless it may be the choice of the rider to use one. When on the road, it must be seen that the stuffing in the saddle pannel does not wear too thin, which it will be apt to do, for if so, it should be repaired.

"Before a horse sets out on a journey, it will be prudent to have him shod some days beforehand, in order to discover if any accident should happen in driving the nails too near, &c. There is another advantage attending this caution, which is, that the shoes become firmer seated on the hoofs, and the clenches and nails rusted, which contributes greatly to keep them firm in their place. If the horse goes too near, so as to cut either before or behind, that must be provided against by shoeing him in a suitable manner.

" Instead of the customary practice of watering horses in the morning, before they are fed, it will be found of more advantage to water them after feeding; as it then more properly dilutes the food that is taken into the stomach, and at the same time washes the mouth and throat, and prevents or restrains the too sudden return of thirst, which induces horses to stop at every rivulet that comes in their way. But, as horses that stand in a warm stable through the night, and, perhaps, feeding greedily on hay, are disposed to drink too much water, when led to a watering trough, it will be proper to prevent them from drinking too much, by giving them water in a pail by measure. About half a pailful at once will be sufficient. On their first setting out, they ought not to be too suddenly hurried on, as the stomach and bowels are then too full. As this fulness goes off, they will naturally mend their pace; but towards the end of the stage, their motion should be restrained by degrees, so as to be brought in as cool as possible. After they are thoroughly cooled, and well dressed, they should then be fed and watered as mentioned above. The same rules may be observed at the end of every stage. At night, the horse's legs below the knee, and the hoofs, may be washed with water, and well rubbed afterwards, till the legs are thoroughly dry, when he may be fed, and indulged with more water at once than he have had before through the day. It ought always to be observed, when horses come to the end of a stage, if they are very warm, that they be walked about gently till they become cool gradually; but by no means to wash their legs, or any part of their bodies, till they are cool. In hot weather, when the roads are dry and dusty, the washing of a horse's legs proves very refreshing, and when the roads are wet and dirty, it is the readiest method of cleaning them; but they ought always to be rubbed dry afterwards."

Mr. Clark here reminds the young traveller to have his horse's shoes inspected at every stage, and whatever is amiss about them immediately rectified. He is likewise to observe that the saddle has kept its proper place, in order to avoid injuring the back or shoulder-blades.

" It frequently happens," says the author, " that the skin of a horse not accustomed to perform long journeys, becomes scalded by the friction of the girths, and likewise on the under part of the breast, between the fore legs, where the skin is loose and full of wrinkles. This proceeds entirely from neglecting to clean the sand

and dirt from these parts, where it is suffered to lodge among the hair, and collects in lumps; so that, by the continued friction in moving, this effect is produced, and is attended with pain to the animal, and causes a contracted step in his going. When this is not taken notice of in proper time, the parts become inflamed and swelled, and this proves a great hinderance to the horse's travelling. When the hair is fretted off by the girths, the latter should be washed clean from the sand and dirt, and dried thoroughly before a fire, after the horse is done up for the night. At the same time, it will be proper to cause the sand and gravel to be picked out from below the shoes, and to wash out the smaller particles of sand that are apt to lodge there, as in weak hoofs it frequently occasions lameness. One great advantage that arises to the hoofs from being frequently washed with water, especially in dry warm weather, is, that it keeps them cool, a state which is most natural to them, and which is much more beneficial than all the *stopping and greasing* which at present is so much in use.

" It is likewise proper to observe, that the saddle girths be not drawn too tight, especially on the belly. If the fore girths on the breast be drawn tolerably tight, that will be sufficient of itself, if the saddle fits properly, to keep it in its place. The girths on the belly, however tight they may be drawn, soon slacken as the bowels empty, and they only serve to give pain to the animal, by confining the viscera, and occasion a difficulty of breathing on the horse's first setting out, when the belly is distended with food; besides, in round-bellied horses, especially if the abdomen is big, the back-girths, the tighter they are drawn, contribute the more to push the saddle forward on the shoulders, in spite of any means that can be devised to keep it in its proper place.

" Road-horses, on long stages, at any baiting place, about the middle of the stage, should have a little oatmeal mixed in about half a pail of water to refresh them. This not only quenches their thirst, when the roads are dusty and the weather hot, but it invigorates them to perform the remainder of the stage. The oatmeal prevents any bad consequences that might arise to them from giving cold water when they are heated, especially if given in small quantity at once.

" In little-frequented inns and baiting places, especially towards the end of harvest, horses are fed with green oats in the sheaf, newly taken from the field, for want of other



feeding. This is extremely hurtful to them, as it occasions faintishness, and frequently produces a diarrhoea or scouring, and great weakness. If possible, in such situations, it would be prudent to get oatmeal for them, and mix it with a small quantity of water, only as much as is sufficient to moisten the meal, so as to prevent it from blowing away by their breath in feeding. It would be the means of saving the life of many a good horse, that would otherwise fall a sacrifice to this kind of green feeding. When oats are new and soft, oatmeal should always be got for horses, if possible, and given as above directed. Bread, of different kinds, is likewise a good substitute in place of new or bad grain, especially the coarse wheaten bread, formerly so much given to horses, and known by the name of *horse-bread*. But, whatever be the kind, if they will not eat it by itself, it may be rubbed down between the hands, or beaten in a trough, and mixed with oatmeal, which will make very good feeding for horses, and most of them will eat it.

“Horses on a journey, from the strong perspiration they undergo, and their constant feeding on dry food, are apt to become costive. This ought to be guarded against, by giving them occasionally a mash of scalded bran, boiled barley, or malt, either singly, or mixed in their oats, by way of a double feed. When a horse shews an inclination to stale on the road, he should always be allowed to stand still for that purpose; and, if he has any difficulty in staling, an ounce of nitre may be given him in his food for a few successive nights. It is of no less consequence to attend to this discharge, than to that by stool; since inattention to either may prove the source of many disorders.”

Mr. Clark concludes this part of his subject with a humane petition in favour of these poor animals; and which is, that of allowing him a little more time to perform the task often required of him. “Fifteen minutes more,” says he, “than what is allowed at present to perform a stage of as many miles, would save the lives of a number of horses in Great Britain yearly, besides the numbers that are lamed, and otherwise rendered useless by such severity.” He likewise intimates some useful cautions to travellers *when the roads are covered with ice*. It then becomes necessary, he says, to have the heels of the horse’s shoes turned up, and frequently sharpened, in order to prevent him from slipping. But as this cannot be done without the frequent moving of the shoes, which injures the crust of the hoof in the parts

where the nails have been driven in, he recommends the use of steel points, screwed into the heels or quarters of each shoe, and which might be taken out and put in occasionally. The particulars of this method we have related in the author’s words under the article *SHOEING*.

**TRAVERSE**, in the manege; a horse is said to *traverse* when he cuts his tread crosswise, throwing his croupe to one side, and his head to the other.

**TRAVES**, in the manege, a kind of shackles for a horse, used in teaching him to amble or pace.

**TRAUMATIC** (*τραυματικός*, from *τραυματίζω*, *vulnero*, to wound), such medicines as are given in case of wounds inward, fores, or bruises. It means the same as *vulnerable*.

**TREAD OF A HORSE**. This is reckoned good, if firm, and without his resting upon one side of the foot more than upon the other, or setting down the toe or heel one before the other. If he sets his heels first to the ground, then it is a sign that he is unsound in his feet. If he sets his toes first to the ground, it shews that he has been a draught-horse. Therefore in a good saddle-horse the whole foot should be set down *equally*, at the same instant of time, and turned neither out nor in.

**TREAD UPON THE CORONET**. See *CRAPAUDINE*.

**TREFOIL** (*Trifolium*), a sort of grass with which cattle are fed. See *SOILING* and *FOOD*.

**TREMOR**, an involuntary trembling of the nerves, like a palsy.

**TREPAN** (*τρεπαν*), an instrument like a joiner’s centre bit, used for sawing out pieces of the skull, in order to elevate depressions of the adjoining parts. The part called the *saw* or *crown*, is cylindrical, with teeth round its lower edge.

**TREPHINE**. This is an instrument used for the same purposes as the trepan, but preferable, because of the great convenience of holding it, and leaning on one side or other of the saw, as we find it necessary.

**TREPINGER**, in the manege, is the action of a horse, that beats the dust with his forefeet in maneing, without embracing the volt; and that makes his motions and times short, and near the ground, without being put upon his haunches. This is generally the fault of such horses as have stiff shoulders. A horse may *trepointer* in going upon a straight line.

**TRICEPS**, three-headed, is a muscle that has three originations, and also three insertions, and may be conveniently divided into three

muscles. In the human subject we may point out an instance, in which the first arises from the os pubis, and is inserted into the linea aspera of the thigh-bone; the second arises from the lower part of the os pubis, and is inserted about the middle of the linea aspera; the third arises from the os pubis, where it joins the ischium, and is inserted into the internal and lower apophyses of the thigh-bone. These pull the thigh-bone downwards, and turn it a little outwards. The *triceps brachii* in the horse is shewn in Plates XIII. and XIV. See the description of parts “in the shoulders and trunk,” under HORSE.

**TRICHIASIS** (τριχίασις, from *τριχ*, a hair), a preternatural direction of the eye-lashes towards the globe of the eye. When there is a double row of the eye-lashes upon the internal surface of the eye-lids, it is called **DISTICHIASIS**. By the name of *Trichiasis*, surgeons also call a curling back, or inversion, of the eye-lashes, so that they brush the eye and excite inflammation.

**TRICHOMA**, the same as **PLICA**.

**TRICHOMANES**, goldilocks, a genus in Linnæus's botany, in the order *Filices*, or fern. He enumerates thirteen species.

**TRICHOMANES**, common maiden-hair, a species of *asplenium*.

**TRICORNES**. So muscles are called which have three terminations.

**TRICUSPIDES VALVULÆ**, the name of three valves which are placed at the mouth of the right ventricle of the heart, just at its juncture with the auricle.

**TRIDE**, in the manege, a word signifying *short and swift*. A tride pace is a going of short and swift motions, though united and easy. A horse is said to work tride upon volts, when the times he marks with his haunches are short and ready. Some apply the word only to the motion of the haunches.

**TRIFOLIUM**, trefoil, a genus in Linnæus's botany. He enumerates forty-six species.

**TRIGEMINUS MUSCULUS**, i. e. **COMPLEXUS**.

**TRIGONELLA**, fenugreek, a genus in Linnæus's botany. He enumerates eleven species. See **FENUGREEK**.

**TRIOSTEUM**, false ipecacuanha, a genus in Linnæus's botany. There are two species.

**TRIP**, or **STUMBLE**, in the manege. A horse is said to trip when he makes a false step. See **STUMBLING**.

**TRISMUS** (τρισμος, from *τριζω*, *strideo*, to gnash), the locked jaw, or tetany of the muscles that bring the lower jaw close to the upper. Dr. Cullen has placed this disease in the class

*Neuroses*, and order *Spasmi*; he then ranked it as a different genus, but lastly considered it as a variety of the *tetanus*: he defines it to be a spastic rigidity of the lower jaw. See **LOCKED-JAW**.

**TRITICUM**, wheat, a genus in Linnæus's botany. Of species he enumerates fourteen. The *triticum hybernium* is that, the farina or meal, and starch, of which are in use.

**TRITORICUM**, a glass for separating the oil from the water, which is obtained by distilling: it is also called a *separatory glass*.

**TRITURATION** (from *tereo*, to wear, or grind), is reducing any substances to powder upon a stone with a muller, as colours are ground: it is also called **LEVIGATION**.

**TROCHANTER** (τροχαντηρ), called also **ROTATOR**. There is the major and minor, or greater and lesser: they are two apophyses in the upper part of the thigh-bone, in which the tendons of many muscles are terminated. For these, in the horse, see Plate V. and the explanation of bones “in the lower limbs,” under **BONES**.

**TROCHAR**, the name of an instrument used to discharge the water in an ascites.

**TROCHES**, a form of medicine to hold in the mouth, to dissolve, as lozenges.

**TROCHLEA** (τροχλία), a pulley, which is accounted one of the mechanical powers. See Plate XI. and the description of parts “in the head,” under **HORSE**. Hence the term *trochleares*, a name given to the oblique muscles of the eye, because they pull the eye obliquely upwards or downwards, as if it turned like a pulley.

**TROT**, a well-known pace of a horse. “The true trot,” says Mr. John Lawrence, in his chapter describing the ‘*paces of a horse*,’ “is performed with a quick and straight-forward motion, and a bended knee. The horse which points out his fore-legs, and goes with his knee straight, is no trotter, whatever the old jockeys may have said of their pointing trotters; for these lose time by overstriding, nor are such usually good hacks. But it matters not how far a trotter steps forward, provided his knee be sufficiently bent. Some horses trot too short, and taking up their feet rapidly, appear to set them down almost in the same place. These are commonly *bone-setters* [rough and uneasy to the rider]; but I have known, now and then, one of them perform a journey of fifteen miles in one hour; though the utmost speed of an English trotter (and I have reason to believe they excel all others) is a mile in about two minutes fifty-seven seconds. Sixteen miles in



one hour has been trotted sufficiently often, and with high weights; in my opinion, eighteen is upon the trotting cards. Perhaps ten miles might be performed in half an hour." Mr. Lawrence considers the story of a gentleman's horse, which trotted thirty miles in less than an hour and a half, as it is related in Bewicke's volume of the natural history of quadrupeds, and other publications, unfounded. He says, in Russia, Sweden, and Holland, they have fast-trotters, and, as he has heard, superior in speed to ours; but his informants were not to be confided in.—"No arguments," says the same intelligent writer in another place, "need be expended, in proving the trot to be *the most useful of all the paces*; since the superior price of those horses which excel at it is a standing proof of it. Fast-trotting, too, is equally contributory to sport as to business, and affords to the amateur, or to him who rides only for the sake of exercise, daily opportunities of gratification, which cannot so conveniently or frequently be obtained upon the turf.

"I am ignorant how long it has been the fashion to cultivate this pace, since trotting matches have never been admitted into our racing annals, and all authors are silent upon the subject; but suppose it to be a natural concomitant of our improvement in the breed of horses. Our mixed breed, or chapmen's horses, are best calculated to excel in this way. Perhaps there never was an instance of a bred horse being a capital trotter, or of performing more than fourteen miles in one hour; or, if such instances have been, they are so rare as not to affect the general principle. The reason of this inability in the racer I apprehend to consist chiefly in his too great pliability of sinew, which occasions him to outstride the limited compass of the trot; and in the delicacy of his feet and joints, which will not permit him to endure the rude concussion of the hard road, which is inevitable in fast trotting.

"A trotter, as well as a racer, *'must have length somewhere;*' it must not however exceed in the legs. Horses, in general, trot well in proportion to the excellence of their shape; and it scarcely need be remarked of what consequence it is for a trotter, on account of the severity of his service, to go clear of all his legs, and to have strong feet. But although an extensive counter-shoulder is absolutely necessary to fast trotting, yet that extreme obliquity, or *slant*, so much in request for the racer, is not so for the trotter; or rather perhaps would be disadvantageous. There is a certain fixedness (so to speak) required in the trotting horse; he

must not overstride or out-lunge himself, *for the instant he straightens his knee* (remark) *he is beaten*. He must also throw his haunches well in. If that natural rapidity, that *wire edge of speed*, is not to be acquired, yet proper shapes will undoubtedly trot, and trotters are to be bred."

Mr. Lawrence divides this description of horses into *fair* and *running* trotters. Of the latter, usually, he says, speed is the best. The runner is distinguished by a rolling motion, and does not bend his knees so much, or step out so far, as the fair trotter. "His pace" the author conceives to be "somewhat similar to the racking of former days, since it has also the appearance of being occasioned by hurts in the joints; and old battered trotters frequently become runners in their latter days." Or, possibly, he thinks, it may be occasioned by bad breaking, and suffering the animal to fall into a *confusion of the paces*; for it is observed, that horses which jump and bound along like bucks will never make good trotters.

"An idea prevails with many, that trotting horses are naturally stumblers, or at least dangerous to ride. It is totally unfounded. They are, perhaps, merely from their mode of going, among the safest; nor is there any peculiar danger in the most rapid trot, provided your hack be well-shaped and sound. The notion has arisen from the miserably battered state of most horses of this description."

For the amusement of his readers, Mr. Lawrence enumerates the chief of those horses which he has known to excel in trotting. With this account, which will be found in vol. I. p. 234, of the "*Philosophical and practical Treatise on Horses*," those who have a curiosity to gratify on the subject will be much pleased. In p. 239 Mr. Lawrence says,

"It is well enough known, to those who request them, that capital trotters, whether for a single mile or for distance, are always scarce, and command a high price; and that it is extremely difficult to obtain them, until they are in such a battered state, that they are scarcely safe to ride; the madness and folly of their owners always wearing out the legs and feet of these horses, in teaching them their pace. As horses may be judged capable of the trot from their *shapes*, I would recommend it to such sportsmen as desire a hack of this kind, to purchase a promising one in his youth, either from his own search, or through the means of a dealer who knows something of the matter, which, in truth, but few of them do.

"If a young trotter be obtained, it will be

perceived, in an instant, whether he has a natural great bent of speed; but if not, granting he be thorough-shaped, and can trot a mile in four minutes handomely, he may improve, and become capital for a long distance. In training a young trotter, take a long time, keep him almost always within himself, never trot him with a slack rein, or suffer him to hitch, lead with one leg, or to get into a confused run *between trot and gallop*; but accustom him to pull well and steadily at you. Always oblige him to finish his trot in a walk, never in either canter or gallop; in which latter case cause him to turn round, as is the custom in a trotting race. No hack is fit to trot any considerable distance until rising six years old; but it is remarkable that trotters, unlike gallopers, do not lose their speed from old age; many having been known to trot as fast at twenty, and even near thirty, years of age, as they did in their prime: a solid recompence, surely, for the extraordinary care which these horses demand. As it is obvious, that the damage which trotters receive in their feet, joints, and sinews, arises from their violent and incessant thumping the hard road, common sense will naturally prescribe moderate and sparing exercise, and soft ways." Whenever we see a thoughtless young fellow wantonly trotting a good horse over a pavement, Mr. Lawrence says, we may very fairly presume the existence of "a natural affinity between the skull of the jockey and the materials with which his course is strewed; and even if you go so far as to wish a happy contact between both, humanity herself shall forgive you."

"I would even recommend," says he, "training a trotter on the turf, wherever that advantage can be obtained. Far from rendering a hack unsteady in his trot, when he afterwards comes upon the road, he will trot more steadily for it; the chief reason for a good trotter flying into his gallop (independent of bad jockeyship) being the soreness of his joints and feet. The best grooming, and the constant use of a loose stable, are necessary at the same time.

"To be able to perform sixteen miles in one hour, a horse must have speed enough to trot a mile in considerably less than three minutes and a quarter. If he be full of meat, and in work, from a fortnight to a month's training is sufficient; and that by no means in the severe and rattling way which it is usually practised by our Smithfield jockeys, who sometimes contrive to win their match, and lose their nag. Four miles trotting in the morning, through the last of which you must come along, and good walk-

ing exercise in the afternoon, is fully sufficient. This ought to be preceded by a gentle dose of physic. If a trial, all the way through, be held necessary, let it be as long as possible (consistent with condition) previous to the race.

"Trotters should always be ridden with a double-reined bridle, moderately curbed; and with respect to a jockey, I would advise a preference to be given to one who belongs to the running stables, and that not entirely on the consideration of weight. Supposing one of this description to be rather unaccustomed to trotting, he will train on sufficiently in the course of exercise; and will have, at his fingers ends, certain important points, of which the common trotting-jockey will always be ignorant. The reason usually assigned for setting a huge fellow upon a trotter, rolling from side to side, sawing his jaws, and beating him out of his stroke, is, forsooth, that the weight may steady the horse, and the jockey be strong enough to hold him; as if it did not require pulling with infinitely more effect and judgment to make a waiting race with a hot and powerful horse, which is so often and so well performed over the Beacon-course, by a rider of eight stone.

"In trotting matches, no attention is usually paid to weight, unless it be to set up a sufficient lump, for the sage reasons aforesaid; and I have actually known twelve stone chosen in preference to nine. But I submit it to sporting men, whether it be consistent with reason to exclude the general principle in this case, or whether weight can possibly be without its exact share of consequence, in a pace which sometimes equals the rate of twenty-five miles per hour. For my own part, I am perfectly satisfied on this head, not only from theory, but repeated experience; and can assure those who wish to profit by trotting matches, that they will find their account in paying due attention to the weight they put on horseback."

Mr. Lawrence, in conclusion, advises the sportsman to beware how he makes his match in the winter season, when the roads are deep and heavy; and suggests, that, if made in summer, the proper time for a trotting race is early in the morning, when the least impediment will be experienced from casual intruders.

**TROUSSEQUIN**, in the old manege, a piece of wood, cut archwise, raised above the hinder bow of a great saddle, which served to keep the bolsters firm.

**TROUT-COLOURED**, applied to a horse, is a white, speckled with spots of black, bay, or sorrel, particularly about the head and neck.

**TRUNK**, the main stem or body of any



thing, as distinguished from the limbs or branches, which spring from thence. A trunk, in the Linnæan system, is that part of a vegetable which produces the leaves and fructification, and is of seven kinds, viz. 1. *Caulis*, or stem. 2. *Culmus*, a *straw*, the stem or trunk of grass. 3. *Scapus*, a *stalk*. 4. *Pedunculus*, *Peduncle*, or foot-stalk of a flower, being a partial trunk which raises the fructification but not the leaves. 5. *Petiolus*, a *Petiole* or foot-stalk of a leaf. 6. *Frons*, a species of trunk, composed of a branch and leaf blended together, as in palms and ferns. 7. *Stipes*, the base of a frons. Former botanists applied the word *truncus* to trees only.

**TRUNK**, the body or carcase of an animal; that part with which the head and limbs are connected; consisting of the chest, belly, and hips, with the viscera included in them. See **BODY**. In a horse, the *muscles of the trunk*, which include all those belonging to respiration and other important uses, may be divided into those of the breast and those of the lower belly, with the muscles of the back and loins; most of which are also endowed with a very great force. See the different plates of the muscles of the horse. The back and loins have four pairs of muscles, common to both. The first are remarkable for their great length, extending from the haunch-bones and os sacrum, and reach to the two temporal bones, one on each side. These, being attached to the spines in their passage, are a great security to the back, and assist the other three pair in all its motions. When all the muscles of the back and loins act together, the whole back is extended; but when the muscles of either side act singly, the body is inclined to that side only. The abdomen has five pair of muscles, which arise from the ribs, haunch-bones, share-bone, breast, and other circumjacent parts, and are mostly inserted into the white line that divides the belly in the middle. One pair pass obliquely downwards; another pair obliquely upwards; a third have a straight direction from the breast to the share-bone; a fourth pair assist the straight muscles in pulling down the breast; the last are the transverse pair, which take their course from the loins and lowermost ribs on each side, to the linea alba. This partition of the abdomen is absolutely necessary for the origin and insertion of the muscles belonging to it; and indeed no other kind of mechanism could have been so well adapted to a part so large, and of a roundish circumference; for had the muscles not been determined in the middle, but stretched over the whole belly, it would have been im-

possible for them to have acted with sufficient force. The use of these muscles is to defend and sustain the bowels, which are of so tender and delicate a nature, that they have also a caul or network of fat, the omentum, and a thick double membrane to cover them. They are also of use in furnishing a sufficient pressure for the discharge of the excrements, and to give some help to the muscles of the breast, diaphragm, and ribs, in respiration.

**TRUSSED**. A horse is said to be *well trussed*, when his thighs are large, and proportioned to the roundness of his croup.

**TUBA EUSTACHIANA** (from *tubus*, a hollow pipe); called also *meatus cœcus*, was first discovered by Alcmenon, a disciple of Pythagoras; he called it the auditory passage. Eustachius claims the first discovery, and from him it has its present name. This tube passes from the fore-part of the drum of the ear to the back part of the nose, above the root of the velum pendulum palati, and allows the air to pass inwards. See **EAR**.

**TUBÆ FALLOPIANÆ**. These begin at the uterus, and terminate at the ovaria. Fallopius discovered them, whence their name. See **FALLOPIAN TUBE**.

**TUBER**, solid puff-balls, or truffles, a species of *lycopodon*.

**TUBERA**, tumors of the solid parts not dropical, as hardened glands, &c.

**TUBERCLES**, little tumors that suppurate and discharge pus, often found in the lungs. See **VOMICA**.

**TUEL**, a name for the fundament of a horse.

**TUMOR**, a preternatural rising or swelling on any part of the body of a horse. All parts of an animal are subject to swellings or tumors of one kind or other, as well the bones, ligaments, and tendons, as the muscles, membranes, and other soft parts; and these proceed either from an external or internal cause, viz. from wounds, blows, bruises, and such-like accidents, or from fevers, which sometimes produce critical tumors (see **CRITICAL**), by which the febrile matter seems to be cast off; and sometimes tumors proceed from some chronic disease.

Gibson asserts, that all tumors are formed either by *fluxion* or by *congestion*. Those by fluxion, he says, are such as come suddenly to maturation, viz. "where the fibrillæ are broke, and the influx into the part is hasty and violent, as in all boils and most critical swellings. Those by congestion advance gradually, and are, properly speaking, *chronical*, and affect the body according to the cause from whence they pro-

ceed, and the habitual temperament of the blood and juices, during their continuance." He considers tumors as arising from four causes, *viz.* from phlegmon, erysipelas, œdema, or scirrhus.

1. The *phlegmon* proceeding from a plethora is known by its heat, tension, and pulsation of the principal artery, that conveys the blood into the part where the tumor is seated, when the veins and other returning vessels are broken or obstructed, so as to cause an accumulation, or, according to the vulgar phrase, a gathering. This kind of tumor is the same we call a boil, which generally comes soon to maturity, and ends in suppuration. A common termination of phlegmon is in abscess. See ABSCESS.

2. The *erysipelas* is also an inflamed swelling, accompanied with heat and burning. It is more superficial than the phlegmon, and therefore the pulsation of the arteries is seldom felt as in the other. Sometimes the greatest part of the humour is cast upon one part, sometimes it shews itself on several parts of the body at once, over the skin, and near the tendons of the muscles towards the joints, with little blisters. This is popularly named St. Anthony's fire, which is no other than erysipelas. The matter of these tumors is generally thin and of an ill consistence, resembling that which proceeds from a burn or scald, and often of a yellowish hue. Of this kind is what we may observe sometimes in the farcy, and other chronic affections in the horse.

3. The *œdema* is a soft swelling, that yields to the pressure of the finger, without heat, pain, inflammation, or change of colour. Under this denomination are ranked all dropical swellings, or such of any kind as are caused by too much humidity; and as, in the human body, these generally happen to aged persons, so they often prove obstinate and hard to cure in old horses. Swellings, that seem to be of the œdematous kind, sometimes are greatly helped by blistering, firing, and laxative purges; though these are to be used with judgment, otherwise mortification may be induced. Tonic remedies, after a single purge, are generally found to answer best.

4. The *scirrhus* is another kind of tumor. It is a very hard swelling, sometimes entire, smooth, and without pain; sometimes divided into little knots and bundles, seated for the most part among the glands. Of this sort the ancients reckoned cancers, scrophula, and other such maladies: but many tumors of different kinds that rise on the animal body have distinct

peculiarities that render them such as cannot easily fall under any of these denominations, and some are of a mixed kind, participating partly of one and partly of another, either by their original formation, or by some change from what they were at first.

**TUNICA**, a tunic, coat, or membrane, in anatomy. Thus we have the *tunica albuginea*, or white membrane, in the testicle; the *tunica sclerotica* in the eye. Also the *tunica retiformis*, or net-like membrane, &c.

**TUNSTATES**, are salts formed by the tunstic acid, with the different alkaline, earthy, and metallic bases. There are twenty-four species enumerated in M. Fourcroy's Elements.

**TURBINATED**, is applied anatomically to those parts that have a resemblance to the turban in shape, or are of a conical figure. Thus, in the head there are the *turbinated bones*; and we give the name of *turbinatum* to the pineal gland.

**TURBITH MINERAL**. See MERCURY.

**TURCICA SELLA**, or *Sphenoidalis Sella*. See BRAIN and QUADRUPED.

**TURGESCE**, any over-fulness or swelling of a part.

**TURMERIC**. See CURCUMA.

**TURN**, in the manege, a word commonly used by the riding-masters when they direct their scholars to change hands. See CHANGE and ENTIRE.

**TURNER**, an excellent and well-known article of food for horned cattle, sheep, &c. See FOOD.

**TURNING STRAIGHT**, in the manege, an artificial motion of a horse: of these there are several sorts, described in books on the equestrian art.

**TURN-SICK**, in horses; a name for the staggers. See STAGGERS.

**TURPETH**, the *Convolvulus Turpethum* LINN. It is the cortical part of the root of an Indian convolvulus, brought to us in oblong pieces, of a brown or ash-colour on the outside, and whitish within. The best is ponderous, not wrinkled, easy to break, and discovers a large quantity of resinous matter to the eye. Its taste is at first sweetish; chewed for a little time, it becomes acrid, pungent, and nauseous. This root is a cathartic, not of the most certain kind. The resinous matter, in which its virtue resides, appears to be very unequally distributed; inasmuch that some pieces purge violently, while others, in larger doses, have scarcely any effect at all. An extract made from the root is more uniform in strength, though not superior or



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even equal to purgatives that are more commonly used.

**TURPENTINE.** See **TEREBINTHINÆ**.

**TURUNDA**, and **TURUNDULA**, signify a *tent* for a wound, or any thing to be thrust into an orifice or capacity.

**TUSHES**, are the fore-teeth of a horse, seated beyond the corner teeth, upon the bars, where they shoot forth on each side of the jaws, two above, and two below, about the age of three, and three and a half, and sometimes four; and no milk or foal teeth ever appear in the place where they grow. See *AGE of a Horse*.

**TUSSIS**, a cough. See **COUGH** and **COLD**.

**TUSSIS EPIDÊMICA.** See **INFLUENZA**.

**TUTTY**, an argillaceous ore of zinc, found in Persia. Of this, levigated, an ointment is made.

**TWISTED**, a term applied to a horse that is reduced to a state of impotency by violently wringing or twisting the chord of his testicles, which was cruelly practised by the old farriers.

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**TWITCH**, an instrument used by farriers to keep the head of a horse in a particular position whilst he is undergoing any painful or unpleasant operation. It consists merely of a short stick, or roller, to the end of which is affixed a noose of cord, sufficiently wide to admit the animal's upper lip. The noose being twisted by a few turns of the stick in the hand of the groom, the horse is thereby secured from making any resistance.

**TYMPANITES** (*τυμπανιτης*, from *τυμπανίζω*, to sound like a drum), that particular sort of dropsy that swells the belly up like a drum, and requires tapping.

**TYMPANUM** (*τυμπανον*), a drum. This, from its resemblance, is applied to a part of the ear. See **EAR**.

**TYPHUS** (*τυφος*), the nervous, or low, fever.

**TYPE** (*τυπος*), the constant order observed by a fever, in its intention and remission, signifying the same with period, or circuit.

**TYROSIS** (from *τυρος*, *cheese*), a coagulating or curdling of milk in the stomach, after the manner of cheese.

## U.

### U L C

**ULCER**, a solution of continuity in some fleshy part of the body of an animal, with loss of substance. Some writers confine the term ulcer to that breach or erosion of the skin and parts immediately adjacent which either proceeds immediately from an internal cause, or at least is closely connected with a particular state of the constitution. Others divide ulcers into two classes, to wit, the *simple* and the *compound*; meaning by the former a mere wound which nature is capable of restoring, and will restore, without any assistance from art.

But even though an ulcer may be supposed to proceed from a vitiated state of the habit, yet all common sores may also be reckoned ulcers, when they degenerate and contract an ill disposition, whether they take their origin from an internal or an external cause. Hence they are of various kinds, according as they are owing

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to these different causes. Wounds, bruises, and other accidents, ill treated, or neglected, occasion ulcers; as well as a depravity of the blood and juices, which in the first instance only produce tumors. Of this kind are the poll-evil, fistula, &c. Some ulcers are also internal in the lungs, liver, kidneys, or other viscera, where they produce wastes and decays, and some are among the joints and ligaments.

There are also other distinctions made use of in describing ulcers, viz. sinuous, fistulous, putrid, scrophulous, cancerous, &c. A *simple* ulcer is superficial, attended only with foulness, and hard or uneven edges raised above the surface of the skin. A *compound* ulcer properly is when not only the flesh is ulcerated, but a caries exists in the bone, with other symptoms. A *cavernous* ulcer is that which has a small

narrow entrance, with a wide spreading bottom. Those ulcers that run aslant, proceeding from abscesses between the muscles, or their tendons, are called *sinuous* ulcers; and those that are tubular, smooth, and callous on the inside, and run in several meanders, are called *fistulous*. And where there is a great efflux of foetid matter, with swelling, inflammation, and inward sickness, such ulcers are called *putrid*. *Cancerous* and *scrophulous* ulcers are usually seated on the glands, and may be distinguished by their proper diagnostics: the scrophulous ulcer being more slow in its progress, and less offensive; whereas the cancer extends rapidly, and makes great havoc on the part, and seriously affects the whole constitution. *Varicous* ulcers are situated among the veins, and are always soft and distended with blood. Of this last kind are many that happen to horses in the farcy and some other complaints.

Simple and superficial ulcers on the skin are not, in general, difficult of cure; but sometimes their edges rise above the surface, and grow callous, in which case they require some time before these can be cicatrized. An ulcer or *caries in the bone* is necessarily more tedious and difficult to cure than an ulcer in the flesh, and the difficulty is more or less, in proportion to its situation, and the causes from whence it proceeds. Cavernous ulcers often become so, merely by their situation in places where bandage cannot be applied; but are not so troublesome as sinuous ulcers, especially when the sinuosities terminate near the joint, for then they are often attended with great difficulty. Fistulous ulcers are attended with all the same difficulties, or rather greater, being often situated among the joints, and other inconvenient places; a circumstance which, to horses, is of bad consequence, and, for the most part, renders them of little use, even when a cure is effected. Putrid ulcers are always dangerous, as proceeding from a bad state of the constitution; and when they discharge very great quantities of foetid matter, they are apt to end in mortification. Cancerous ulcers are of no less ill consequence, only that there is more respite given; for horses will live languishing a considerable time with cancerous and other anomalous ulcers, as in some kinds of glanders, and sometimes in the farcy, till they are quite extenuated, and the cure in such cases is for the most part impracticable. Varicous ulcers among the blood-vessels are spongy, and hard to manage, discharging, for the most part, a bloody ichor. Of this kind are also some of those ulcerations that creep along the veins in

the limbs, where they are both troublesome and difficult of cure, on account of the animal's exertions; but a single varicous ulcer may be easily healed by proper applications and bandage.

Having premised these things in general with respect to ulcers, we shall next proceed to speak of their cure; and this we shall do briefly, as those that are most peculiar to horses have been treated at some length under the articles POLL-  
EVIL, FISTULA, GLANDERS, QUITTOR, &c. We propose therefore here only to lay down some general directions suited to the remaining species, as they have been described; beginning with the most simple, and proceeding to those that are the most complicated.

1. A *simple ulcer*, we are told by Gibson, seldom needs any other treatment than washing with spirit of wine, and then dressing it with pledgets spread with turpentine and honey. "If there be an itching with small pimples," says he, "mix with every four ounces of the digestive one drachm of verdigrise in very fine powder, and apply it once a-day, or once in two days, if the running be small. If little papillæ or pimples arise in the bottom of the ulcer of a faint red colour, let your dressing be mixed with precipitate; viz. a drachm of precipitate in fine powder to every two ounces of the digestive." If the ulcer be deep, and does not fill up in a kind manner, as happens to some weak declining constitutions, bark and other strengthening remedies, and good keep, must be given, and the part dressed with the following ointment:

Take Common turpentine, four ounces;

The yolks of two eggs:

Incorporate these well together; then add,

Myrrh, in powder, half an ounce;

Mastic, or frankincense, in fine powder,  
two drachms;

Tincture of myrrh, a sufficient quantity  
to bring it to a due consistence.

The ulcer may be dressed every other day with this digestive, washing it first with brandy, spirit of wine, or tincture of myrrh.

The common black basilicon, made of pitch, rosin, and bees-wax, with oil instead of hogs lard, will greatly promote the cure of these ulcers where there is a poor weak blood. The common yellow basilicon will do the same. The latter is compounded by Gibson in the following manner, and he says it not only makes a proper dressing for such ulcers, but is useful in many other respects:



Take of Yellow wax,  
 Yellow rosin,  
 Burgundy pitch, of each three pounds;  
 Common turpentine, twelve ounces;  
 Linseed oil, three pounds six ounces.

Melt them over a slow fire into an ointment.

The former, or *black basilicon*, is thus directed by Gibson:

Take of Yellow wax,  
 Rosin,  
 Pitch, of each half a pound;  
 Olive oil, nine ounces.

Melt them together, and strain through a piece of canvas.

Either of these indeed will tend to fill up those ulcers that need it with good granulations of flesh; especially if proper remedies be, at the same time, administered inwardly. Antimony and gum guaiacum, of each equal parts, Gibson directs, to be divided into ounce doses; one to be given every day, with good and nourishing diet, consisting of the best hay and oats that can be got, and water-gruel to drink.

On the other hand, when an ulcer fills up too fast, and produces a quantity of fungous flesh, it may be repressed principally by dressing with dry powders, such as myrrh and calaminaris, or, occasionally, with red precipitate and burnt alum in fine powder, of each equal quantities, mixed; carefully avoiding all greasy applications. If the fungus be still troublesome, the ulcer may be dressed with lint or tow first dipped in blue vitriol water, and then wrung out dry, and laid to the ulcer. If the edges be callous, and make a kind of rim round the ulcer, precipitate dressings always answer best; for which purpose,

Take either of black or yellow basilicon, four ounces;

Oil of turpentine, one ounce;

Red precipitate, in fine powder, three drachms, or half an ounce. Mix.

Gibson says, he always found this method succeed better with horses than either cutting the callous edges off, or eating them down with caustic, or with the actual cautery. Though somewhat slower, he says it is more safe, not being so apt to produce inflammation, which, instead of destroying the callosities, frequently renders these ulcers more obstinate than before, and more liable to fungus.

2. *Cavernous ulcers*, which are deep, narrow at their entrance, and wide at their bottom, re-

quire to be laid open, or else the orifice should be widened by a caustic; so that no matter can lie concealed, as is ordinarily the case with this kind of ulcers. If the ulcer be in such a situation that it can be laid open with safety, and the habit of body be good, it may be cured with the same ease as a simple flesh wound, by observing the same methods as in the former case. However, in case it does not fill up, by the means already directed; and if it be found, on probing the part, that it has also sinuosities; it must then be treated in the following manner, as a sinuous ulcer.

3. *Sinuous ulcers* should be laid open without loss of time by incision, provided acrid injections, such as the solutions of blue vitriol, alum, or corrosive sublimate, have been previously tried, and where bandage cannot be used; for when these are suffered to continue long, they will run deeper and deeper, and often among the tendons and interstices of the muscles, so as, at last, to make their way to the bones, which become carious, and the cure then becomes both tedious and difficult.

4. *Fistulous ulcers* commonly take place after this manner: First, there is inflammation and a tumor, that forms an abscess; and if this last is not cured by incision, and proper pressure applied, the discharge penetrates deeper, and forms a sinuous ulcer; and when this has existed long, or when it happens to an unhealthy animal, several sinuses form, and the matter makes its way from one to another by small tubes, or communicating passages. This last circumstance forms,

5. The *fistulous ulcer*, the inside of which is generally lined with a callous coat or membrane; so that no re-union can take place till these communicating passages are laid into one, and their callosities destroyed. This, by proper incisions, may be done; and the parts should then be dressed with levigated red precipitate, or with pledgets dipped in a solution of blue vitriol, or with phagedænic water, which may be made with two drachms of corrosive sublimate (known to the farriers by the name of *white mercury*), dissolved in a quart of lime-water; and, in some obstinate cases, it may be made stronger by increasing the quantity of the sublimate.

Sometimes, by injudicious treatment, common abscesses are converted into sinuous and fistulous ulcers. These of themselves would perhaps have no such tendency; but a vile practice exists amongst common farriers of introducing long hard tents, by which the muscles

are separated in the same manner as a piece of timber is cleft with a wedge, and thus by tearing the membranes the abscess grows deeper, and even sometimes runs into sinuses that lie out of the reach of common applications. The same thing is often promoted by a frequent and unnecessary use of the probe. In an abscess, the weight of the matter collected in it occasions an easy separation of the contiguous cellular membrane, so as to yield easily to a slight force applied by a rude hand, and to form deep sinuosities; to prevent which, the parts ought in all such cases to be kept as firm and close, by a bandage, as they are able to bear, or a depending opening may be made for the passage of the matter in another direction, or a seton may be introduced for the purpose (see SETON), so that by one or other of these methods many bad accidents may be prevented. But the reader may properly consult what has been observed in the articles POLL-EVIL, FISTULA, &c.

6. *Putrid ulcers*, whatever may have been their origin, always exist under an unfavourable state of the constitution, as well in horses as in men; consequently the cure of them requires internal means, such as are proper in malignant diseases. Externally, Gibson advises cataplasms of mithridate, and the treatment, in every other respect, that would be required in a case of apprehended mortification. See MORTIFICATION.

7. *Varicous ulcers* are directed by the same writer to be bathed with restringent fomentations made of pomegranate or oak bark, of each a handful; with alum and white vitriol, boiled in vinegar. "The matter of these ulcers," says he, "is generally a thin bloody water, which will thicken or dry off by this method. If the vessels continue relaxed after the ulcer is healed up, *firing* will be proper to strengthen the part, by contracting the coats of the veins that feed the ulcer: and in some cases it may be made so deep as to cut off their communications." Watry ulcers, which have some affinity to the varicous, occur in horses affected with the farcy. See FARCY.

8. The last species of ulcer usually mentioned by authors is the *cancerous*. These ulcers sometimes exist with the farcy and glanders; but besides these, some horses are subject to *cancerous warts*, which, when they are deep seated, are apt to degenerate into true cancers. Gibson asserts that he has also known cancers take their rise from rowels injudiciously placed in glandular parts; but of this mention is made under the article CANCER.

Mr. Baynton, a surgeon at Bristol, has struck out a method of curing *ulcers of long standing*, in

the legs of old persons, by drawing their edges inwards by the help of slips of sticking-plaster. Very great success has attended this method as practised on the human subject; and there seems no reason to doubt, but the same might be beneficial to brute animals in particular cases.

We shall conclude by observing, that *Ulcus* is a genus in Dr. Cullen's *Nesology*, in the class *Locales*, and order *Dyalyses*. He defines it to be a purulent or ichorous solution of continuity in a soft part. Mr. Bell, in his surgery, divides ulcers into two classes, viz. *local* and *constitutional*. The species belonging to the first class he states to be,

The simple purulent ulcer,  
The simple vitiated ulcer,  
The fungous ulcer,  
The sinous ulcer,  
The callous ulcer,  
The carious ulcer,  
The cancerous ulcer,  
The cutaneous ulcer.

Of the second class are, the venereal, the scorbutic, and the scrophulous ulcer, ulcers in the tonsils, ulcers in the womb, &c. These distinctions, however, are scarcely applicable to the ulcerations which occur in brute animals, whose diseases in this, as in other respects, are remarkably simple.

ULNA, called also sometimes CUBITUS. This bone, in the human subject, is long and hard, with a cavity in its middle. It lies on the inside of the fore-arm, reaching from the elbow to the wrist. It is big at its upper end, and grows smaller to its lower end. At its upper it has two processes, which are received into the fore and hind sinuses of the extremity of the humerus. The foremost process is small and short. The hindmost (called *ολεκράνον*) is bigger and longer. It stays the fore-arm when it comes to a straight line with the arm. Betwixt these processes, it has a semi-circular sinus, which receives the inner protuberance of the lower end of the humerus, upon which we bend and extend our fore-arm. And along the middle of that there runs a small ridge, by which this bone is articulated to the humerus by *ginglymus*. Had the articulation here been an *arthrodia*, the joint must have been much weaker, but the hand could have received no more motion from it than it has now from the shoulder.

The inside of this upper end has a small sinus, which receives the circumference of the round head of the radius. Its lower extremity, which is round and small, is received into a sinus in the lower end of the radius; and upon this



extremity it has a short and small process, from which the ligaments, which tie it to the bones of the wrist, arise. This process serves to keep the bones of the wrist in their place.

This bone, in the horse, is shewn in Plate V. See the description of bones forming "the right upper limb," under BONES.

ULNAR (*ulnaris*), an epithet applied anatomically to such parts as are connected with the ulna. Thus the name of *Ulnaris* is given to the *Cubital artery*. We have also the *Ulnaris Externus*; i. e. the *Extensor Carpi Radialis*; the *Ulnaris Gracilis*, i. e. *Palmaris Longus*; and the *Nervus Ulnaris*, otherwise called *Cervicalis*.

UMBILICAL, a name given to certain parts connected with the *umbilicus* or navel. Thus, we have the *Umbilical artery*, which is a continuation of the *hypogastric*. The *Umbilical vessels* are four ligamentary vessels called by this name. See the article QUADRUPED.

UMBILICAL REGION. This begins, in adult subjects, about two fingers' breadth above the navel, at a transverse line, supposed to be drawn between the last false ribs on each side, and ends below the navel, at another transverse line, supposed to be drawn parallel to the former, between the two crista of the ossa ilium. This region is divided into three parts: one middle, which is properly the umbilical, and two lateral, called *ilia*, or the flanks; and they comprehend the space between the false ribs and the upper part of the os ilium on each side.

UMBILICUS, the navel. The navel-string consists of vessels wrapped up in a production of the chorion and amnion. It is generally about a foot and a half long, that the motion of the foetus may not pull the placenta from the womb. What remains of this is the navel.

UNCERTAIN, in the manege, a term applied to a horse that is naturally restless and turbulent, and, not being confirmed in the manege he is put to, works with trouble and uncertainty.

UNCIFORME OS, the fourth bone of the second row in the human wrist. For this bone in the horse, see Plate V. and the description of parts "in the upper limbs," under BONES.

UNGUENTUM, an ointment. See OINTMENT.

UNGUIS, a nail, which see.

UNGUIS OS. See MAXILLA SUPERIOR; also Plate V. and the explanation of parts composing "the head," under the article BONES.

UNGUIS, also called *pterygoid*; a collection of matter in the pupil of the eye, of the shape of a man's nail, whence its name; it is a kind of PHLYCTENA.

UNGUIS. So the ancients called that sort of articulation which we term SUTURE.

UNITE, in the manege. A horse is said to *unite*, or walk in union, when, in galloping, the hind quarters follow and keep time with the fore.

URENT, any thing that is hot and burning, from *uro*, to burn.

URETERS (*σπερτηρες*), are, in most animals, two long and small canals, which come from the pelvis of the kidneys, one on each side: they lie between the doubling of the peritonæum, and descending in the form of an *f*, they pierce the bladder near its neck, where they run first some space betwixt its coats, and then they open into its cavity. They are composed of three coats: the first is from the peritonæum; the second is made of small oblique muscular fibres; and the third, which is very sensible, has several small glands, which separate a slimy liquor to defend it against the acrimony of the urine. The neighbouring parts furnish them with blood-vessels, and their nerves come from the intercostals, and from the vertebræ of the loins. Their cavity is sometimes contracted in three or four places, especially towards the bladder. Men who are subject to the gravel, and given to excessive drinking, have them sometimes so much dilated, that one may put the end of one's little finger into them. Their use, in all animals, is to carry the urine from the kidneys to the bladder; and their obstruction causes a suppression of urine. See BLADDER.

URETERITICA ISCHURIA, suppression of urine from inflammation of the ureters.

URETEROLITHICA ISCHURIA, suppression of urine from *calculi* in the ureters.

URETHRA (from *ουρον*, urine, called also *meatus urinarius*); a membranous canal running from the neck of the urinary bladder inferiorly through the middle of the cavernous bodies placed on each side, as far as the extremity of the penis, and ending there by a longitudinal orifice in the anterior part of the glans. The inner membrane of the urethra, or passage for the urine from the bladder, is a continuation of that which lines the bladder; it is very smooth and sensible; in it are several lacunæ, which are the seat of gleet. See GLEET. In female animals, the urethra is wider than in males, and its length is also considerably less. Sometimes a stone is fixed in some part of the urethra, and this produces pain, then inflammation, tumefaction of the parts, and always a partial, and frequently a total, suppression of urine. See the article BLADDER.

Mr. Coleman, in his lectures, says the urethra

varies in its structure in different animals, and that this part, in female quadrupeds, being shorter and less complicated than in males, is less liable to disease.

**URINARIA FISTULA**, the same as **URETHRA**, so called from its office, which is to convey the urine.

**URINE** (*ουρον*, from *ορω*, to rush out); a fluid secreted from the blood by the kidneys, conveyed by the ureters to the bladder, and from thence discharged from the body through the urethra. It is so acrid and disposed to putrefy, that, if retained long in the bladder, it endangers life. When suppressed, it has been known to pass through the pores of the skin. The sudden discharge of some fluids after swallowing them has caused authors to imagine that there is some shorter passage to the bladder than through the kidneys; but though difficulties attend this circumstance, some of the most eminent in their profession are of opinion that all the urine is secreted by the same vessels.

In the human subject, many are the signs which have been pointed out in the urine, as indicating different states of the body; but the fact is, that this excretion affords the practitioner but little useful information. The same may be said in the cases of brute animals.

The appearances observed in the urine at the crisis of acute diseases are generally included in the three following, viz. 1. the *nubes*, or *nubecula*, which is when a cloud, as it were, is diffused through the urine after it has stood a while in a glass; 2. *sublimationes*, *suspensa*, or *sublimia*, which is, when the cloud sinks a little, leaving the urine above somewhat transparent; and 3. the *subsidentia*, *subiecta*, or *sedimenta*, which is when the whole cloud falls and makes a thick sediment at the bottom. 4. When it drops a white mucus, or purulent sediment, it is then named *purulenta*.

Urine contains a peculiar salt, called *microcosmic salt*, and which is found no-where but in this secretion; also *marine salt*; and, if distilled in a retort, it yields not only the *volatile salt*, and *empyreumatic oil*, common to animal matters, but also a *peculiar kind of phosphorus*.

The urine is sometimes too copiously discharged, see **DIABETES**; it is also sometimes difficultly passed or totally suppressed, see **ISCHURIA**; it is sometimes mixed with blood, and in some instances it is involuntarily discharged.

Gibson says a suppression of urine is caused either by an inflammation obstructing the functions of the kidneys, or when the pelvis or ureters are choaked up with stones, or other foreign matter, or affected with any numbness or other defect, that may disable the kidneys

in their office of separating the urine from the blood. In this case the bladder is generally empty, so that a horse will make no motions to stale, nor stand straddling as in other disorders of the urinary passages, when the bladder is full, or the urethra inflamed; but if he continues a few days in this condition, without a secretion of the urine, his body will swell to a very great degree, and he will break out universally in blotches, and, without speedy relief, will die.

Horses are rarely subject to an obstruction to the passage of urine from calculi. This, however, Gibson says he has known in some few instances. In such cases, he says, the proper method of cure is to begin with the strongest diuretics, with the use of stimulating clysters; and if there be a suspicion of inflammation in either the kidneys or ureters, it is proper to bleed plentifully, to the amount perhaps of three pints or two quarts. He also advises the following balls to be given, and repeated two or three times the first day (for in such cases no time must be lost) and as often the next, for if a horse does not stale in thirty hours his case is desperate:

Take of Juniperberries, in powder, one ounce;  
Socotrine aloes,  
Nitre, in powder, of each six drachms;  
Oil of turpentine, half an ounce;  
Oil of amber,  
Oil of juniper, of each two drachms;  
Liquorice powder, enough to make  
a mass of a suitable consistence.

This being too large for one ball, may be divided into two for one dose.

For a clyster, he directs the following:

Take of Barbadoes aloes, two ounces;  
Turpentine, beaten up with the yolks  
of two eggs, two ounces;  
Jalap, in powder, half an ounce;  
Nitre, powdered, four ounces;  
Juniper berries,  
Bay berries, bruised, of each about  
a handful.

Let these be infused in two quarts of a decoction of mallows and marshmallows, then add,

Linseed oil, one pint. Mix.

If these do not remove the complaint, we are advised to rub the horse's loins with a mixture of oil of turpentine and oil of amber, and to lay a cataplasm over the small of his back and kidneys, made of pounded garlick, mustard-seed, camphor, and soap. This, it is said, will prove beneficial as a stimulant to the kidneys, in case



they happen to be deficient in nervous influence; and, in case of inflammation, the same remedy will act as a blister, without the danger of a strangury, and in that respect also do service. "It should be spread," says the author, "on a coarse flannel cloth doubled, bound on with a woollen cloth, and renewed once in two days till the horse comes to stale freely: calomel may also be of use in case the kidneys are not inflamed, viz. two drachms, made up in a ball, and repeated in two days, and after these the horse may be purged.

"But if the kidneys should happen to be ulcerated or wasted when the above-mentioned symptoms appear, there can be but small hopes of success; for while a horse retains the use of one kidney, he may live a considerable time in some easy business, but will always be in danger when by any accident the other happens to be affected;" Gibson relates the following case of a drum horse.

"This horse," says he, "belonged first to a miller, where he had been accustomed to carry heavy loads upon his back, by which both his kidneys had been hurt. He came full-aged into the troop, and continued several years in it, but every winter was so full of eruptions, that his hair looked as if it had been notched with scissars. These symptoms were, in a great measure, owing to the disease of his kidneys, as appeared afterwards, for he was often subject to suppressions of urine; and though he was always relieved by timely applications, yet these grew more frequent as he grew old, till the last attack, when he continued three days, before he died, without staling or the least disposition to stale, during which time he never stood wide and straddling as horses do when their bladders are full, but would move his hind legs and cross them with great ease till the next day, that his legs, and afterwards his whole body, swelled, and broke out all over in moist watery blotches, notwithstanding the strongest and most powerful diuretics were given him to promote a discharge by urine.

"On opening this horse, I found nothing remaining of his right kidney but a small schirrus, the bigness of a pullet's egg, almost ossified and of no regular shape. The emulgent veins and arteries, the ureters and vessels belonging to the kidneys, were shrunk and almost dried up. The left kidney was extremely large, and spongy in some places, in others schirrous and broken into several ragged interstices, and so mangled that nothing of its true texture remained; so that it was impossible a separation of urine could take place. For want of this, his external parts

were become bloated and ulcerous, and there were great quantities of water collected both in his chest and abdomen.

"I had once a troop-horse that recovered with many of the same symptoms; but, as I had reason to apprehend, his complaint did not proceed from any previous hurt or injury, but from a fever that greatly affected his nerves, by which his kidneys were probably rendered paralytic. This horse could not stale, neither did there appear to be any urine in his bladder, having no oppression on that part, nor any disposition to stale. He swelled universally, and his head to such a degree that both his eyes were shut up, and one of his nostrils, in the thinnest part of it, was two or three inches thick. He was cured of this symptom by diuretics and emollients, and was able afterwards to do his duty for several years."

URINOUS, any thing resembling urine, in its most sensible qualities, as saltiness, smell, &c.

UTERUS (from *ὑτρον*, *the lower part of the belly, or uter, a bottle*); the womb; called also *hysteria, matrix, &c.* In a human female, the uterus is situated between the bladder and the rectum. It is covered with the peritonæum, which comes from the back part of the bladder, ascends up the fore part of the uterus, from thence over the fundus, down the posterior side, and so to the rectum. On each edge of the uterus this position of the peritonæum forms a broad duplicature, which is extended on each side, more or less directly, to the adjoining lateral parts of the pelvis, forming a sort of membranous partition between the anterior and posterior halves of the cavity of the pelvis; and then is continued loosely with the peritonæum on the side of the pelvis; these two duplicatures are called the ligamenta lata; the laminæ of which are connected by a cellular membrane, and contain the tubæ Fallopiæ, the ovaria, and part of the spermatic vessels, and those which go to the uterus, also the ligamenta rotunda and the nerves. The uterus is rather triangular in its shape, the fundus is almost a straight line, the two sides approaching each other make it narrow where the cervix begins, then it grows larger, then narrower again at the os tincæ which is received into the vagina. The inside of the uterus is smooth; at the upper part very vascular; at the sides below, white. The cervix uteri on each side is divided into two lateral parts by a ridge, whence the fibres go off in the manner of a feather. At each angle of the fundus we may introduce a bristle into the beginning of the Fallopian tubes, which go in a tortuous manner, and terminate at the ovaria in

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an irregular round jagged extremity, where their diameter is about one third of an inch; this fringe is called *morsus diaboli*, and is hung upon a membrane like the mesentery, between the doublings of which the vessels run to the tubes. The tubes are not smooth internally, but there are innumerable longitudinal rugæ placed close upon one another. See OVARIA and TUBÆ FALLOPIANÆ. The uterus is furnished with blood-vessels from the hypogastrics and the spermatics. The uterus differs, in many particulars, in different brute animals, though its similarity of form and structure is considerable in the domestic quadrupeds of equal size, as in the mare and the cow. The points wherein the uterus of the latter differs from the human, are stated minutely under the article QUADRUPEDS.

## U V U

UVEA (from *uva*, an unripe grape); named also *Aciniformis*, or *Acinosa tunica*. So the posterior lamina of the iris has been called. Some have called the choroides by the name of uvea, and the coloured part they called iris. The ancients called it uvea, because they observed it to be of the colour of an unripe grape in grazing animals, for they chiefly dissected brutes. Later anatomists call the iris a circular muscle.

UVULA (a dim. of *uva*, so named from its appearance). From the middle part of the palatum molle, the uvula hangs down into the throat, acting as a valve, by means of whose different actions we can breathe either through the mouth or the nose. In man it is of an irregularly conical shape, and glandulous: in brute animals its form is somewhat different.

## V.

### V A G

VACCINE, any thing belonging to the cow. This term has been recently used as an epithet to denote a disease productive of the most important benefits to mankind. See Cow-Pox, which is now generally named the *Vaccine disease*, or the *Vaccine pock*.

VACCINIUM, whortle-berry, a genus in Linnæus's botany. He enumerates fifteen species.

VAGINA, a sheath; called also, anatomically, *caulis*. It is the passage from the external pudenda to the mouth of the uterus. Its course is horizontal in brutes; its inside is very vascular and villous, and the villi are very full of vessels and nerves. The vagina is contracted at its orifice by the *sphincter vaginae*, and in its whole length by the *levator ani*. Each side of the anterior portion of the vagina is covered externally by a thin broad expansion of vessels called the *plexus retiformis*; these two planes run down each side of the clitoris behind the nymphæ, and likewise cover the urethra like a collar before they are spread on the vagina; this plexus is capable of being erected, and in

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coitu it is compressed by the *sphincter vaginae*. The vagina in the mare is a fleshy membranous tube, which lies immediately next to the rectum, and is collapsed and compressed between the bladder and the rectum. The structure of the vagina is very vascular, and on its inside it is very rugous, so as to admit of considerable distension in parturition.

VAGINALIS, from *vagina*, a name given to certain parts of an animal body, as to a coat of the testis, which is called *Vaginalis Tunica*. See TESTICLE. This name is given also to a coat of the œsophagus, and of the spinal marrow.

VALERIAN; the *Valeriana officinalis* LINN. Great wild Valerian. It is a plant with channelled stalks, the leaves in pairs; each leaf is composed of a number of long, narrow, sharp-pointed segments, indented about the edges, of a dull green colour, set along a middle rib, which is terminated by an odd one; producing on the tops of the stalks umbel-like clusters of small monopetalous flowers, which appear in May, June, and July, each of which is follow-



ed by a single naked seed, winged with down; the root consists of tough strings, with numerous small threads matted together, issuing from one head, of a dusky brownish colour approaching to olive. It is perennial, and grows wild in dry mountainous places.

Valerian roots when dry have a strong and grateful odour, rather a disagreeable, warm, bitterish, subacid taste; the strength of their smell and taste is the only mark of their genuineness and goodness. The roots have often a disagreeable smell from the urine of cats: and sometimes there is a mixture of the roots of a species of crowfoot among them; but on chewing them they are somewhat caustic, and thus they are discovered. These should be taken up at a proper season, and properly preserved, or they become inert.

The powdered root digested in water, or in spirit of wine, impregnates both menstrua strongly with the smell and taste; water distilled from it smells strong of the root, but no essential oil separates, though several pounds are committed at once to the still. The watery extract is strong, disagreeably sweetish, and a little bitter; the spirituous extract is agreeable, and much resembles the root.

As a medicine, these roots are an excellent antispasmodic in nervous diseases, and may be placed amongst the mildest of the fetids. In this view valerian is commended by Gibson, who extols it, more particularly as a remedy for horses in the staggers.

VALET, in the old manege, was a stick armed at one end with a blunted point of iron, to prick a leaping horse. Some valets formerly had spur-rowels upon them, with the points beaten down. When a horse first began to be worked round a pillar, without a rider, they used to prick his flanks with the valet, to make him know the spur and obey it without resisting.

VALVES, in anatomy, thin membranes in the vessels, as it were, like folding doors, to prevent a reflux of any fluid by the same canal. They have different names according to the diversity of their shapes, as sigmoides, femilunares, &c.

VALVULA (dim. of *valva*); a *small valve*, or membranaceous substance, that shuts and opens over the mouth of a vessel, or placed in the centre of some veins, in different parts, to prevent the blood regurgitating in the course of circulation. Thus we have the *valvula cæci, coli, ilii*, &c. See *INTESTINES*, &c.

*Valvula* also denotes the outer coat, shell, or covering, of a capsular or other pericarp; or the

several pieces which compose it. If a pericarp is entire, it is said to be univalve; if it is divided, according to the number of pieces or divisions, it is called bivalve, or trivalve. The leaflets, composing the calyx and corolla in grasses, are also named valves; as are also the substances or scales which close the tube in some flowers.

VALVULÆ CONNIVENTES. These are loose circular folds, chiefly in the small intestines towards the stomach, and are productions inwards of the villous coat; their use is to mix the chyle with the bile and pancreatic juice, and to retain the chyle that it may not escape the lacteals.

VALVULAR, any thing of the nature or construction of a VALVE. Thus a valvular opening in an abscess, is such a puncture made in the skin as will suffer its contents to flow out without allowing the air to rush in. These are very important in some cases.

VALVULAR LYMPHATICS. The lymphatic system in most animals, but particularly in man and quadrupeds, is full of valves. These valves are much more frequent than in the common veins, and hence the lymphatics have sometimes been distinguished by this name.

VARICOCELE, is a varicose distension of the veins of the scrotum.

VARICOUS ULCER. See *ULCER*.

VARIOLÆ, the small-pox, a human disease well known.

VARISSE, or VARIX, the same with the blood spavin. See the articles *SPAVIN* and *VARIX*.

VARIX, a kind of dilatation in a vein, where the blood turns in a kind of eddy, and makes a knot upon the part. Gibson, speaking of the blood-spavin in horses, says, "This malady is called a *varix* in the human body; and is often the effect of bruises, and other accidents. Aged and weak persons are subject to varices from the laxity of the coats of the veins, and in young persons they are owing for the most part to a plethora, or fulness of blood. But a blood-spavin in a horse most commonly is owing to these concurring causes, viz. an uncommon laxity of the veins, and a strong impulse in the circulation. The vein where the varix is seated not passing in a straight course, but with a contortion or winding, especially when two of the larger inferior branches meet together near the hollow, and there enter the great vein of the hind leg. This generally forms the largest varix or blood-spavin, and of such sort as most of all disposes to lameness. The shape of the hock contributes also to this

malady when it is broad and large, as it is more remarkably in some horses than others, and the processes of the bones of that joint are high and prominent, so as to render the sinuosities both deep and spacious, whereby a lodgment is more easily formed for the turgid vein. This circumstance, inconsiderable as it may seem, greatly retards the motion of the blood, and contributes to increase the swelling, which is continually impressed by every action of the joint; and hence it is that, in a blood-spavin, a horse always grows the more lame the longer he is kept in exercise.

"The usual cure of this kind of varix is taking up the vein, but that is not necessary in all cases. When a blood-spavin proceeds from a strain in the hock, it ought only to be treated with cold astringent lotions, which often effect at least a temporary cure. Young horses often have a fulcns in that vein when they come first into work, but that defect sometimes wears off with careful management, good diet and exercise, and with other suitable usage. The properest applications to strengthen the relaxed veins are, vinegar, verjuice, or solutions of alum, applied on linen cloths round the hock. Indeed these are not only proper to prevent a blood-spavin, but useful in all weaknesses of the joints in colts and young horses that have been put early to business.

"But if either the structure, or situation of the tumour in the hock, is such as admits of no application, the best way is to take up the vein by opening the skin the whole length, then passing a crooked needle underneath the vein, a little way below the swelling. The needle should be armed with a waxed thread doubled, with which the vein is to be tied. The same operation may be also performed a little way above the swelling, and the turgid part of the vein will come away by digestion when the ligature rots off. After thus taking up the vein, the part should be dressed with any simple digestive, as turpentine and honey, which will soon effect a cure; and the current of the blood being cut off by this operation, will gradually enlarge the neighbouring branches, and by that means keep up its communication so as to supply the limb with its proper support and nourishment. When a horse has had a vein taken up, however, he should be used gently for a considerable time, for some horses with these defects never recover their strength so perfectly as others that have never been subject to them."

VARUS, a pimple. Dr. Cullen places this as a variety of *Phlogosis Phlegmone*.

VAS BREVE, a short vein, passing from the stomach to the spleen in the human subject.

VASA PRÆPARANTIA, the contents of the spermatic chord.

VASA, vessels; a term applied to all the parts of the body having any resemblance to tubes or canals. According to the parts or offices to which they belong, they are differently distinguished; as into *Deferentia, Præparantia, Lactea, Seminalia, &c.*

VASTUS. The muscles thus named in the human subject, have their appellation from their being the two largest and thickest belonging to the leg. The *Vastus Externus* is a muscle that comes from the root of the great trochanter, and part of the linea aspera. The *Vastus Internus* arises from the root of the lesser trochanter. They both help to extend the leg. These muscles also exist in the horse. See Plates X. and XIV. and the several descriptions of parts in "*the lower limbs*," under HORSE.

VAULT. To vault a horse-shoe, is to forge it hollow, as in the case of Mr. St. Bel's shoe. See SHOEING. But this sort of shoe spoils the feet; for the sole gradually assumes the form of the shoe, and the frog becomes every day more and more raised from the ground.

VEGETABLES, are natural bodies, having organised parts, but without sensation. In the Linnæan system, they are divided into the seven families or tribes following, viz. 1. *Fungi*, mushrooms. 2. *Alge*, flags, whose roots, leaf, and stem, are all in one. 3. *Musci*, mosses, whose antheræ have no filaments, and are placed at a distance from the female flower, and whose seeds also want their proper tunic and cotyledons. 4. *Filices*, ferns, whose fructification is on the back of the leaves. 5. *Gramina*, grasses, which have simple leaves, a jointed culm or stem, a glumose calyx, and a single seed. 6. *Palmæ*, palms, which have simple stems that are frondose at the summit, and have their fructifications on a spadix issuing from a spathe. 7. *Plants*, which include all that do not enter into the other divisions. These are *herbaceous*, when they die down to the root every year; for in the perennial kinds, the buds are all produced on the root below the surface of the ground: *shrubs*, when their stems come up without buds; and *trees*, when their stems come up with buds. Vegetables are each primarily divisible into the root, the herb or plant itself, and the fructification.

The substances contained in vegetables, and separable from them by art, are gum, resin, oils, saline matter, and earth. These are called the



*native principles of vegetables*;—*native*, because they naturally exist in plants; and *principles*, not as being simple, but as it is by these that one plant differs from another, and that each exerts its specific power; and as they cannot be further resolved without totally destroying their peculiar qualities. Various are the divisions into which vegetables are distinguished, whether considered as the subjects of botany, or of medicine, &c. and numerous also are the preparations they afford to pharmacy and other branches of the medical art. Amongst a variety of other preparations of the vegetable kind, by fermentation we obtain inflammable or vinous spirit, ether, malt liquors, wines, vinegars, tartar, &c.—by fire, or burning, are procured empyreumatic oils, fixed vegetable alkaline salts, &c. Vegetables constitute the food of the horse, cow, and many other animals, See **FOOD**.

**VEHICLE** (from *veho*, to *carry*), in general, signifies, that which carries or bears any thing along, as the serum is the vehicle to convey the red particles of the blood; and in pharmacy, any liquid to dilute another with, or to administer it in, to a patient, is thus called.

**VELOCITY**, that affection of motion by which a body passes over a certain space in a given time. The velocity is said to be greater or less according as the body passes over a greater or less space in the same time.

**VEIN**, in anatomy. The veins are only a continuation of the extreme capillary vessels, reflected back again towards the heart, and uniting their channels as they approach it, till at last they all form three large veins, viz. the *vena cava descendens*, or descending hollow vein, which brings the blood back again from all the parts above the heart; and the *cava ascendens*, which brings the blood from all parts below the heart; and the *vena portæ*, which carries the blood to the liver. The coats of the veins are the same with those of the arteries, only the muscular coat is as thin in all the veins as it is in the capillary arteries; the pressure of the blood against the sides of the veins being less than against the sides of the arteries. See the articles **BLOOD-VESSELS** and **HEART**.

In the veins there is not any pulse, because the blood is thrown into them in a continued stream; and likewise, because it moves from a narrow channel into a wider. The capillary veins unite with one another, as do the capillary arteries. In all the veins which are perpendicular to the horizon (we mean in horses, for in the human body the veins of the uterus and the *vena portæ* are excepted) there are small mem-

branes, or valves. Sometimes there is only one, sometimes there are two, and sometimes three placed together, like so many half thimbles, stuck to the sides of the veins: but if the blood falls back, it must fill the valves; and they being distended, stop up the channel, so that little or no blood can repass them. It is sometimes necessary to take up, or tie, a horse's vein. See the article **BAR a vein**.

As, in respiration, great pressure is made on the diaphragm, and the circulation by this means is impeded, the phrenic vein is very large. The hepatic veins of the horse are very numerous, there being only four in the human subject. The *vena cava* passes through the liver, and receives blood from it. The mesenteric veins terminate in the liver. The *cava* bifurcates near the aorta's bifurcation, and passing over the pelvis, the iliac receives blood from the femoral. In the horse, the dorsum penis has several plexuses of veins, terminating in the external, superficial femoral veins. The deep-seated femoral vein passes under the artery, and arriving at the stifle, it accompanies the artery, and is termed the popliteal. That portion of it which passes on the outside of the leg, and comes to the hock, is the seat of the blood-spavin. The posterior tibial vein joins the superficial femoral, is continued down the posterior part of the large metatarsal bone, and then divides into two branches.

**VENA**, a vein. See **VEIN**.

**VENENUM**, poison. See **POISON**.

**VENERIS CESTRUM**, the heat of love, that desire of enjoyment in coition which brute animals experience at stated periods. See **BREEDING**, &c.

**VENTER**, signifies any cavity, and was formerly applied to the head, breast, and abdomen, which were called the three venters. Hence also, ventricle. *Venter* in a more limited sense signifies the belly.

**VENTRICLE**, a diminutive of the former, is applied to more contracted divisions, as some particular parts of the brain, stomach, &c. which see.

**VERATRUM**, white hellebore, a genus in Linnæus's botany. He enumerates three species. See **HELLEBORE**.

**VERDEGRISE**, copper, rusted with vinegar. It is partly in a saline state, and partly in the state of a metallic calx. If this verdegrise be digested with distilled vinegar, the vinegar becomes loaded with it to the point of saturation. This forms a green solution, which, by crystallisation, yields very beautiful blue crystals, commonly called distilled verdegrise. See **ÆRUGO**.

**VERJUICE**, an austere acid liquor, made

from the crab apple, in the same manner as cyder. When the fruit is in perfection, it is ground or mashed, and the juice is pressed out, strained, and fermented, in the common way. It is, however, on account of its roughness and extreme astringency, unfit for any other purpose than as a topical remedy in strains, bruises, &c. and the manner of using it is the same as is commonly practised with vinegar, than which it is considerably more powerful, and of course better adapted for veterinary uses. See VINEGAR.

VERMES, worms. See WORMS.

VERMIFORMIS, a prominence of the cerebellum, so called from *vermis*, a worm, and *forma*, shape.

VERMICULAR, a term applied to many parts of the body, for their resemblance either in shape or motion, to worms.

VERMIFUGE, (from *vermis*, a worm, and *fugo*, to put to flight), is any medicine that destroys or expels worms.

VERMIN, a term frequently employed by the old writers on farriery when describing any affections of the horse arising from living creatures, such as animalculæ, worms, &c. but especially the latter. See WORMS.

VERNIX, the varnish-tree, or poison-ash, a species of RHUS.

VERTEBRÆ. See SPINE. The spine of the horse is convex above and concave below, and the vertebræ of which it is composed form an arch, which materially adds to its strength. There are seven cervical, eighteen dorsal, and six lumbar, vertebræ. There are thirty-six ribs, nine of which are true and nine false, on each side. Five bones form the sacrum, and from thirteen to fifteen the os coccygis. The first cervical vertebra is called atlas, and has no spinal process, but four oblique processes and two transverse. It has six articulating surfaces. There are four foramina in this bone, two for the passage of the vertebral artery, one for the last pair of nerves, and another for the spinal marrow. The second is called dentata, and differs in figure from the first. It has a spinal process, and six articulating surfaces. It has foramina similar to those of the first. The third, fourth, and fifth, differ from each other in nothing but their size. If fracture ever takes place in these bones, it must be in the oblique processes. The use of projections in these bones is to act as mechanical levers to muscles. The seventh vertebra has no foramina, for the passage of the vertebral arteries, and its spinal process is larger than that of any other of the cervical vertebræ.

Extensive motions and great strength are but seldom united in the same joint. This is the case however in the vertebræ of the horse. The dorsal vertebræ have each a cavity in the transverse process for the articulation of the ribs. The sixth and seventh are usually the largest. They increase until we arrive at the seventh, and afterwards decrease. They have long spinous processes, at the posterior part of which there are two articulating surfaces, and two also at the anterior part, for the articulation to each of the neighbouring vertebræ. The first rib, and even the remainder, articulate with two vertebræ, and each vertebra articulates in part with four ribs. The head of the posterior articulates with the acetabulum of the anterior. The transverse processes are single and more round than the cervical. There is likewise a foramen on each side of the dorsal vertebræ for the passage of the nerves. The lumbar vertebræ have the spinal processes shorter than those of the dorsal. The transverse processes may be considered as double, there being two projections. They have no cavities for articulations of the ribs, but have a foramen on each side for the passage of nerves. The bones of the sacrum have no transverse processes.

Horses are liable to an anchylosis in the spine. When dislocation takes place in the vertebræ, the animal frequently expresses great pain. When a part of the spine is fractured, the portion beneath becomes paralytic and the urine is not voided, owing to a paralysis of the bladder. We have seen several instances of fracture of the spine, more particularly in barracks, where the horse, having been laid down under the bale or pole meant to divide him from his neighbour, has suddenly and forcibly endeavoured to rise, by which exertion, as the bale will not accompany him to a sufficient extent, the above fatal accident ensues. It is much to be wished that these disasters might be avoided, by inventing a different and safer separation for horses situated next to each other in the stables, as many very valuable animals yearly fall a sacrifice to the present method.

Cows are subject to a disease, which has sometimes been accounted a complaint of the spine. It happens after parturition, and is owing to pressure made on the nerves of the pelvis by the foetus. It may be removed by the application of spirits of turpentine, or, if this prove ineffectual, by blistering the part.

VERTEBRAL, any thing belonging to the vertebræ. The vertebral arteries, veins, and nerves of the horse are shewn in Plate XI. See



the description of parts composing "*the Neck*," under the article HORSE.

VERTEX, is the crown of the head, situated between the sinciput and occiput: hence also figuratively it is used for the top of any thing.

VERTICAL, an epithet applied to the *Parietal BONE*. See Plate V. and the description of "*Bones in the Head*," under BONES.

VERTIGO. This is the appearance of visible objects that are without motion, as if they turned round, attended with a fear of falling, and a dimness of sight. Now it is manifest, that an object will seem to move circularly, if the images which proceed therefrom fall successively upon different parts of the retina: as, for instance, going towards the left side, while the object is really without motion, and the images flowing therefrom always represent the same distance, such an object will appear moving in a circle; for in the retina the images are reversed, and painted in a contrary situation. And this may be done when the object is at rest, and the eye only moved; for whether the object moves and the eye is at rest, or the object rests while the eye is moved, the rays streaming from the object will not fall upon the same part of the bottom of the eye: and therefore, since we judge of the changeableness of place in which an object exists from the changeableness of the place where the object is painted, an object absolutely at rest may seem to turn round by the eye being in motion. Again, the object and eye being both without motion, the rays will not always fall upon the same place, if the optic nerve be alone in motion; and therefore since a right and an oblique incidence do not excite the same action on the nerves, and the same species of motion, if the optic nerve only be moved, and the object be at rest, it will appear to shift its situation, that is, by the change of place in which it is represented. The disease termed vertigo, however, both in men and brutes, arises from some interference with the regular functions of the brain. See APOPLEXY, HEAD, &c.

VERRUCA, is a wart: and the epithet *Verrucous* is applied to any excrescence having resemblance to a wart.

VESICA. See BLADDER, which it signifies; whence, from their resemblance in shape to a bladder, we have *Vesica Biliaria*, the bag which holds the gall. See LIVER. And *Vesica Urinaria*, the urinary bladder, &c. See QUADRUPEDS.

VESICANTIA, i. e. VESICATORIA.

VESICATORIA, are external applications,

which occasion *vesication*, which is the rising up of blisters, or little bladders. See CANTHARIDES.

VESICULA, a diminutive of *Vesica*, and applied to the same parts, or those that are smaller in bulk, as the *Vesiculæ Adiposæ*, *Vesiculæ Seminales*, &c. See QUADRUPEDS.

VESSEL, in an animal body, a natural tube, generally conical in its capacity, consisting of fibres variously disposed. See BLOOD-VESSELS.

VESSIGON, or VESSION, other names for the *wind-gall*. See the article WIND-GALL.

VETCH, a well-known plant, much cultivated in many parts of England, and of which there are several species.

Some sorts of this plant, the seeds of which ripen in autumn, grow naturally in most parts of England, in shady places among bushes, and by the sides of woods. The roots of these are perennial; but their stalks are annual, weak, and grow to so great a length (for they will climb up to the height of six or eight feet wherever the tendrils which proceed from the end of their leaves can lay hold of boughs, branches, or the side of a hedge, to support them), that they are hardly fit to be cultivated in the field, though some writers have recommended them for this purpose: for as they cannot be supported there, they will trail so much upon the ground, that they will be apt to rot: nor do their shoots, which are less succulent than those of the vetch commonly raised, grow to a sufficient height to be cut for use till late in the spring, when there is little want of green food for cattle.

Miller, after sowing for many years the common vetch or tare, which is much cultivated in the fields for fodder, seems to think that which has black seeds a distinct species from the white; for he has never found either of them vary. Both these are annual, and perish soon after they have perfected their seed. Their stalks are angular, streaked, and hairy: they are weak, and want support, and generally trail upon the ground when they do not find any thing to fasten themselves to. Their leaves are composed of several pair of blunt lobes, and are terminated by tendrils. The flowers, which are pretty large, proceed from the wings of the stalk, and sit very close to the base of the foot-stalks of the leaves. Two of these flowers generally spring from the same joint: those of the black-seeded sort are purple, and those of the white seeded are white. They appear in June and July, and are succeeded by erect pods, containing three or four round seeds in each, which ripen in August and September.

The white vetch is rather the more succulent plant of the two, and therefore it is best for fodder; but many are unwilling to cultivate this sort, because their seeds being white, are much sooner discovered by rooks and other birds, than those of the black, which bear a nearer resemblance to the colour of the ground. This objection may, however, be easily removed, by sowing them in drills, and then covering them carefully, instead of the usual method of scattering them with a broad-cast, and plough them in lightly.

The small black-seeded vetch, which some call *rathripe*, and others *pebble*, *goat*, or *summer vetch*, is much tenderer than either of the former, and therefore less cultivated. This must always be sown in the spring; whereas the others may be sown either in spring or autumn.

But another species of vetch, viz. the Siberian, hardly known to the generality of farmers in this country, bids fair to become, perhaps, the most useful of all for fodder; for its stalks grow to a great length, and are well furnished with leaves, which do not decay in autumn, like those of the other sorts, but continue green all the winter, in defiance of the hardest frost: so that in February and March, when there often is a scarcity of green fodder for ewes and lambs, this may be of great service, especially if the plants are supported so as not to trail on the ground. Their flowers, which appear in July, are of a light-blue colour.

Vetches afford excellent food for sheep in the spring, make cows give a great deal of good milk, and horses are fonder of them, cut green, than almost any other food.

The best way is to cut them fresh every morning as they are wanted; and if the farmer has occasion for them for this use only, he may sow in the spring, to great advantage, the large vetch, at different times; by which means he will have a succession of crops, which, to give green to his cattle, he should always cut just before the plant flowers, for it is then in its tenderest and most succulent state, and will afford most nourishment: whereas if he leaves it till the seeds are nearly ripe, the stalks harden, grow sticky, and are of far less value; besides that many of the lower leaves will, by this time, be withered or dropped off, and entirely lost.

VETERINARIAN, one who is acquainted with veterinary science in all its parts and relations. As these different branches of the art are usually practised by the same person, this would be a more suitable appellation than that of veterinary *surgeon*, which has a more limited signification. See VETERINARY SURGEON.

VETERINARY, a word derived from the Latin *veterinarius*. This term, according to Mr. St. BEL's explanation of it, is appropriated to that part of medicine which regards the cure of morbid domestic animals. Several learned men, he says, have attempted to discover the origin of the word, which, nevertheless, appears to be involved in great obscurity. "Some have derived the word *veterinus* (from whence *veterinarius* has been formed) from *veho*, to carry; 'quasi animalia ad *vehturam* idonea;' or from *veho*; 'veluti *vehterina*, vel *veheterina*.' Others have deduced it from *venter*, the belly; because beasts of burthen carry their loads attached to their bellies; 'quod onus ad *ventrem* religatur gerit.' They who wish to examine these learned attempts, may consult Gesner's edition of *R. Stephens's Thesaurus; Fabricii bibliothec. Latin.* 1. 3. c. 12. *not.*; add the note to *Lucretius*, lib. 5, l. 863, in Havercamp's edition. What the true etymology of the word may be, is a question of some philological intricacy, though but of little importance. It is sufficient here to say, that the word *veterinarius*, as used by Columella and Vegetius, signifies a practitioner in one particular part of medicine, namely, that which respects the cure of diseased cattle; and that *ars veterinaria* signifies the art of healing, applied to the healing of cattle.

"The word *hippiatric* is a compound term, formed of the Greek word *ἵππος*, a horse; and *ιατρος*, physician. This word, therefore, expresses that part of medicine which treats of the cure of diseased horses in particular, and constitutes a principal branch of that division of medicine, which treats of the diseases incident to cattle in general, and to all other domestic animals.

"We have undoubted evidence that this art was cultivated in very early times. In the infancy of medicine, when the art of healing was confined to the rude elements of surgery, it was indiscriminately applied to the relief of all accidental distresses to which the animal frame was liable, whether they occurred in man, or in those animals which constituted his wealth, and were the associates of his labours. In these times, many things concurred to attach the minds of men to the well-being of their cattle. They were almost solely used for tillage, and the dairy; and the life and health of the herds was an especial concern. It was forbid by an ancient law in Greece, under pain of severe penalties, to kill a labouring ox. Cattle was the great medium of exchange before the invention of coin; and the riches of countries and individuals were estimated by the quantity



of their cattle ; whence we may reasonably infer a proportionate attention to their condition and preservation. And the laws of religion, which rigorously forbid the sacrificing of any animals, but such as were in the most perfect state of health and form, confirmed the necessity of giving due attention to that object."

VETERINARY COLLEGE, an institution first established in the year 1792, at St. Pancras, near London. The public are indebted for this truly national foundation to the discernment and patriotic exertions of the Agricultural Society of Odiham, in Hampshire. The first professor was Mr. St. Bel, a Frenchman, who had previously signalized himself in this country as a veterinary anatomist, by dissecting the famous race-horse *Eclipse*. See ECLIPSE.

This college is supported by public subscription. The annual contribution is two guineas, but payment of twenty guineas at once constitutes a subscriber for life. In some recent instances, the institution has also shared the bounty of parliament; an important saving having resulted to the nation from the appointment of veterinary surgeons to the different regiments of British cavalry.

The views and objects of the college appear in the following statement, printed by the authority of the governors.

The grand object, they observe, is the improvement of veterinary knowledge, in order to remedy the ignorance and incompetency of farriers, so long and universally complained of. For this end, a range of stables, a forge, a theatre for dissections and lectures, with other buildings, have been erected; a gentleman of superior abilities has been appointed professor, with other requisite officers.

The anatomical structure of quadrupeds, as horses, cattle, sheep, dogs, &c. the diseases to which they are subject, and the remedies proper to be applied, are investigated and regularly taught; by which means, enlightened practitioners of liberal education, whose whole study has been devoted to the veterinary art in all its branches, may be gradually dispersed over the kingdom, on whose skill and experience confidence may be securely placed.

Pupils to the college, in addition to the lectures and instructions of the professor, and the practice of the stables, at present enjoy (from the liberality of some of the most eminent of the faculty) the advantage of free admission to their medical and anatomical lectures. These pupils, previous to leaving the college, are strictly examined by a medical committee, from whom they receive a proper certificate; and

several, examined and approved, have already left the college, and are at this time practising in various parts of the country with great success.

Subscribers have the privilege of sending their diseased animals to the college, without further expence than that of their daily food, and these in general form a sufficient number of patients for the practice of the professor and pupils. On fixed days, the professor prescribes for animals belonging to subscribers who find it inconvenient to spare them from home, provided the necessary medicines be furnished and compounded at the college: subscribers' horses are also there shod at the ordinary prices.

His royal highness the commander in chief having been pleased to appoint a board of general officers to take into consideration the objects of this institution, they have reported the continual loss of cavalry to have been very heavy, from the total ignorance of those who have hitherto had the veterinary department in the army. This report his majesty has approved, and henceforward, to qualify for the military service, a veterinary surgeon must be provided with a regular *diploma* from the college. A number of gentlemen, subscribers to the institution, attend once a fortnight for the purpose of inspecting the discipline of the stables, and seeing that the regulations are duly complied with.

The following gentlemen originally constituted the *Committee of Examiners*, for the purpose of granting *diplomas* to the pupils of the college, when sufficiently qualified to engage in practice:

Mr. John Hunter,

Mr. Cline,	Dr. Geo. Fordyce,
Mr. Houlston,	Mr. Home,
Mr. Ainsley Cooper,	Dr. Babington,
Dr. Baillie,	Mr. Abernethy.

"Amongst the improvements of these latter times," says Mr. JOHN LAWRENCE, "the extension of a regularly-cultivated system of veterinary practice, and the attempts to rescue the superior classes of domestic animals from the torturing hand of presumptuous ignorance, are not the least considerable, either in the view of humanity or use. It is true, that during the various ages which have passed since the days of *Columella*, the number of writers treating on the veterinary science, according to the best medical light which their times afforded, has been considerable; but their works had never any very extensive circulation. Competent practitioners were wanted to put their precepts in force, and diseased animals were either totally

neglected, or confided to the unmeaning and capricious efforts of the illiterate vulgar. Entirely to wipe away this opprobrium of humanity and common sense must infinitely redound to the credit of the present times; and it is consoling to be able to announce, that attempts are daily making towards that beneficent end, by considerate and philanthropic characters in various parts of our own and a neighbouring country.

"Ancient prescription, and a false pride amongst the medical faculty, compose the two-fold cause which has heretofore deprived our domestic animals of the benefits and comforts of regular assistance. Cattle have always been *doctored* in every country, either by their attendants or by men pretty nearly upon a level with those in point of education, who, on the strength of having learned to perform the most simple and common operations, and from the want of abler proficient, have undertaken the arduous task of prescribing medicine. We need not wonder that, in former times, such professors were held duly qualified, since men impartially committed their own persons to the hands of ignorant barber-surgeons, and since so many other absurdities of equal magnitude subsisted, which, like spectres and ghosts, have vanished at the approach of modern light; but it may well be thought surprising in this discerning age, when a liberal education is universally acknowledged to be absolutely necessary to the acquisition of medical science, that an illiterate farrier should be trusted in the cure of diseases. Precisely the same studies, physiological, anatomical, and medical, are requisite for the veterinarian, as the human practitioner. The animal economy in its manifold relations is generally and fundamentally the same in men and beasts, and governed by the same laws; the same materia medica is, in a great degree, applicable to both, but the greatest skill is requisite to form a judgment of the diseases of brutes, from their inability to describe their feelings, and the consequent uncertainty of their pathology. Can there be a greater burlesque than the supposition of a man's ability to prescribe physic for a horse merely because he knows how to groom or shoe him? Or might we not also, with equal reason, employ our own shoemakers to take measure of our health? The plea of experience is futile from the utter inability, *primâ facie*, of illiterate and uninformed men to investigate the principles of science, and their total want of opportunity to acquire, even by rote, a rational system of practice. The whole stock of medical knowledge of these practitioners usually consists in a certain number

of receipts derived from their masters or fathers, and with which they continually ring the changes in all cases, right or wrong; and so fiercely are they bigoted to their particular nostrums, that they are totally incapable of all advice or improvement; the common and unavoidable fate of confirmed ignorance, since it is the highest point of knowledge, *to know that we still need information*. They sometimes cure by luck, seldom by knowledge; but often *kill* by regularly adapted process. How often has the miserable patient's shoulder been pegged, and blown, and bored, by way of punishment, for the folly of getting himself strained in the back-sinews of the leg, or coffin-joint! How many pleuritic horses have been killed outright by ardent and spicy drenches, which might probably have cured the colic had they been afflicted with it! How many have been rendered incurably lame from the patten-shoe being affixed to the wrong foot! Let not the reader suppose these to be mere flourishes applied to the generality of farriers within my knowledge: I aver them, on the experience of many years, to be literal truths; and by the tenor of them, he may judge of the majority of that faculty throughout Europe. Into such hands do we commit distempered animals, which have it not in their power to reproach us with their accumulated sufferings; mankind from prejudice, indolence, or want of feeling, neglecting those creatures which they can purchase with their money."

Our author proceeds, in this place, to relate some striking circumstances in proof of his assertion, and afterwards proceeds thus—

"It has been related, that veterinary writers have not been wanting; which has been more particularly the case during the present century, and subsequent to the great modern improvements in medicine. Various able practitioners have also occasionally arisen among us and in a neighbouring country; but the number of such has been so small, that the benefits derived from their efforts have been of course confined to a very narrow sphere. It was many years ago discovered in France, that the best remedy for this defect, and the only adequate method for the general propagation of veterinary knowledge, and the rearing of a sufficient number of persons properly qualified in that line, would be to erect public seminaries expressly dedicated to the purpose. We of this country came (somewhat late indeed) into the same salutary measure; and a veterinary college, or hospital for cattle, has been established at London, another near Birmingham, and I believe one or two



more are under consideration in different parts of the kingdom. The propriety of these steps, and the benefits derived therefrom, must be obvious in the extension of veterinary knowledge and the increase of practitioners. Public institutions, provided they are not unduly favoured with exclusive privileges, or armed with coercive and restrictive powers, are ever most efficacious and contributory to the advancement of science. The scattered rays of knowledge are, by joint and public means, best collected into a common focus or centre, whence they are, with more ease and expedition, diffused and circulated throughout the whole body of the commonwealth.

"The veterinary college has lately adopted a very judicious method of disseminating the true principles of shoeing, by erecting forges in different quarters of the metropolis, where all persons may at any time have their horses shod at the common price charged to subscribers. Prejudice, I know, on more important subjects, has often been trumpeted forth as not only harmless, but beneficial amongst men; which indeed would be just were there any general utility in the continuance of ancient abuses. It is the grand business of philosophy to provide a counterblast for these interested or ignorant trumpeters. It has already been asked of the advocates for our shoeing and sow-gelding doctors, how they came to suppose, that less medical knowledge would suffice to prescribe for the brute, than for the human animal, which can orally depict his feelings, and verbally assist the physician in forming a correct judgment of his disease. They seem to act upon the strange supposition, that it is much easier for an illiterate man to penetrate at once, as it were by *intuition*, into the arcana of the sciences, than for a learned or well informed man to render himself skilful in the nature and management of horses. Can a man be the worse farrier for having learned the necessity of making constant observations of his own, instead of acting by rote, and being guided by a few arbitrary receipts; for knowing the nature of the medicines he prescribes, the anatomy and animal functions of the horse, and for the making all such knowledge his peculiar study? Now that witches and ghosts of all kinds are flitting apace off the scene, it is full time for men to lay aside the expectation of all other uncaused effects."

On these topics Mr. Lawrence dwells with peculiar force of illustration, as he says, "from a motive of justice, on account of the irrational prejudice of too many persons concerning the veterinary college."

"Enjoying a public institution in the metropolis," says he, "where veterinary science in all its branches is regularly taught and practised, it remains for those who interest themselves in the safety and well-being of our domestic animals, to devise and recommend the most proper and expeditious methods of a general diffusion of the benefit throughout the country. Farriers in London ought to be advised by persons of influence to allow their sons and apprentices the advantage of attending the college lectures which are given, and which is indeed already practised by several of good repute. Those gentlemen of the medical profession attending the London hospitals, whose destination is for country practice, will surely perceive great probable advantage in the acquisition of veterinary knowledge, even if they have no present intention to profess that branch of medicine. Business, as is sometimes the case with young practitioners, may run short at the outset, and the leisure time might be both honourably and profitably employed in veterinary practice. Such meritorious and humane occupation could not possibly injure the medical character of a gentleman in these enlightened times; on the contrary, it would be more probable to procure him connections of the most valuable sort, and might be his passport and introduction to the families of sportsmen."

Thus far we have stated the opinions of a writer truly ingenious, and (if we except some few practical points) most deservedly popular. Just, however, as are the encomiums he has bestowed on the veterinary college and its labours at an early period of its existence, yet are we bound more especially to acknowledge the extraordinary progress which this institution afterwards made under its present enlightened and truly ingenious professor Mr. COLEMAN. That gentleman to a natural taste for these investigations united a profound knowledge of his profession as an anatomist and surgeon; a foundation on which the veterinary science could not but be erected with singular advantage. That this has actually been the case, our readers must have had abundant proof in the various articles in which Mr. Coleman's name and writings have necessarily been brought forward; for which reason, we close the present article without entering on these particulars, which it would, otherwise, have been our indispensable duty to have stated.

VETERINARY OBSTETRICS, that part of veterinary practice which belongs to the manual assistance to be afforded to brute females in the expulsion of their offspring. Too little

attention has been paid to this subject, and many valuable animals are daily lost by the want of timely and judicious help in cases of unnatural presentation, &c. What the scanty state of our knowledge would supply, has been noticed under the articles OBSTETRICS, CATTLE, PRESENTATION, QUADRUPED, &c.

VETERINARY SURGEON, in a limited sense, one who practises the operative part of the veterinary art, and whose views do not extend to the treatment of constitutional maladies in brute animals. Though veterinary practitioners in general are named veterinary *surgeons*, and this designation also attaches to those who engage in *all* the branches of the profession as they are required in the different regiments of cavalry, we shall devote this article particularly to the consideration of those qualifications which every man who engages in it ought to possess in an equal degree with those whose conduct and operations are exercised on the human body.

There is undoubtedly no profession in which greater natural qualifications are required than our own. The more liberal nature has been in her gifts, the more carefully the first impressions have been cultivated by rational education, by so much the better will a man be fitted for the practice of it. *Youth, firmness, dexterity, acute sensation, sound judgment, and humanity*, are the qualifications which may be considered as necessary for a surgeon, whether his patient be a man or a quadruped.

1. We shall begin with *youth*, by which is meant that period of life when the body and mind are supposed to be arrived at their fullest vigour. Celsus tells us, *Esse autem chirurgus debet adolescens, aut certe adolescentie propior*—so that, if a man has made good use of his time, and has acquired sufficient knowledge to direct him, he cannot well be too young to perform operations. On the other hand, there is a time perhaps, if a man is willing to preserve the reputation he has acquired by long and extensive practice, when he should lay aside the knife, and content himself with superintending the operations of others. The very cautions which age naturally brings along with it, are apt to degenerate into a timidity highly unfavourable to that adroitness which should distinguish the motions of a good operator.

2. *Firmness*, is the second qualification of a surgeon, and is indeed extended to the mind as well as the body. It implies resolution to go through his operations, however hazardous or severe, undisturbed by any external or accidental circumstances, unmoved by the cries of

the patient, and unawed by the presence of the spectators, however numerous or respectable. It implies presence of mind, to enable him instantly to determine in what manner he shall act if any unexpected accident or appearance should occur in the course of his operation. And lastly, firmness implies a steady, unflinching hand—*Manus strenua, stabilis nec unquam intremiscens*.

3. *Dexterity* in a surgeon argues a manner of so using his instruments, that he shall appear not to be embarrassed with them. It argues agility of motion, so as to finish an operation with all convenient dispatch; and neatness in performing it, so that his incisions shall not be carried on in parts where there is no need of them, nor the parts incised left unequal or jagged, either of which circumstances is very unseemly. It also requires, that the surgeon should be equally ready with his left as his right hand, *Nec minus sinistra quam dextra promptus*.

4. *Acute sensation*, or having all the senses in their most perfect state, is extremely necessary to a surgeon. Celsus confines this to the sight, *Acies oculorum acer et clara*. But in this he is surely guilty of an error; a steady penetrating eye may indeed prove very useful to the practitioners of our art, but there are many cases where this is of little avail unless we appeal to the other senses also. It is possible that instances may occur, where the delicacy of the touch, the quickness of the hearing, the nicety of the smell, and sometimes even the distinguishing property of the taste, are absolutely needful to direct our judgment. How frequently does it happen, when we cannot be determined by one sense, that we call in another to its assistance, and thus from the combination of both form a diagnostic, which we should not have been able to ascertain from either of them separately.

5. A *sound judgment* is, on many accounts, of the utmost importance. It enables the surgeon to form judicious prognostics, by which he may calculate the chances for or against the success of any operation proposed. It is often not less useful in deciding for the patient's utmost possible advantage, than in preserving his own reputation and keeping up the credit of his art. It teaches him to determine with precision the time necessary for performing an operation, leads him to the choice of the best methods of executing it, or perhaps furnishes him with the more laudable and happy contrivance of recovering his patient by more gentle means.



6. *Humanity* is the last qualification mentioned as necessary for a surgeon; and, though last, not the least important and laudable. This indeed is the cardinal qualification of all; it reflects a lustre on the rest, and completes the true character of the man, as well as of the surgeon. The exercise of it is required in two ways; first, humanity in operation, and secondly, tenderness in our subsequent treatment of the patient. Humanity in operating should induce us to put an end to our patient's sufferings as soon as we can, and also to perform this severe though necessary task after such a manner as shall be attended with the least possible degree of pain. Besides the satisfaction necessarily resulting to ourselves from the consciousness of having been actuated by such motives, it may even be of great consequence to the success of the undertaking; for no one can be ignorant how dangerous to the patient is the inflammation that often succeeds an operation, and it is equally obvious, that a long continuance of sharp pain is very likely to produce or increase it.

In the performance of an operation, the surgeon should be on his guard, not to hazard the final success of it, through a wish to be expeditious. It has been too common, to estimate the degree of excellence due to an operator, by the number of minutes in which his work has been performed. The wish to acquire a reputation for superior dexterity should have no existence in the mind on such an occasion; it is a principle dangerous to the patient, who either fails of obtaining the expected cure, or loses a life which a more deliberate operation might have preserved.

Tenderness in our behaviour needs not an argument to enforce its necessity. It is not less honourable to the human than to the professional character; and surely the distresses of brute creatures and the pain we are often obliged to inflict upon them, is sufficient to soften the hardest heart, and to raise the emotions of compassion within us towards those mute sufferers that have toiled in our fields, and laboured that we might enjoy. When dressings are either removed or applied, it should be done with a gentle hand, and in a manner which would convince the bystanders that it is not the surgeon's intention to give pain, even to the most inferior animal, if he can avoid it. A contrary conduct may even prove an obstacle to a practitioner's success in life; for, should he use himself to behave harshly and with cruelty to animals, it is an habit that will increase upon him, and at length render his manners coarse and offensive, even to those on whose liberality

the emoluments of his future practice may in a great measure depend.

We come now to consider the *acquired knowledge* necessary to make a good surgeon. On this point we shall make one general observation, to wit, that the more extensive and universal a young man's knowledge is, the better fitted will he be for the exercise of his profession. But, not to alarm or discourage young persons by considering the subject too extensively, or by a vain display of science, it is necessary here to mention only that knowledge which it is absolutely necessary they should acquire. If they are as conversant as they ought to be in the matter proposed to their industry and application in this work, the knowledge they will then have attained cannot but raise a spirit of enquiry in their minds which will lead them to more important exertions.

It is absolutely necessary, before young persons apply themselves to surgery, that they should have had, in their earliest days, at least a liberal, and, in some degree, a classical education. A knowledge of Greek we shall not absolutely insist upon, though no man who wishes to secure to himself the reputation of learning in any science can accomplish that end without it. The technical terms in medicine, as well as in most other sciences, are derived from that source: we have a few indeed which are borrowed from the Arabic tongue, among which is the word cataract, a disorder called by the Greeks *νόσος*. But it is well known, that the surgical knowledge of the Arabians was chiefly deduced from the Greeks.

In the Latin language the student ought to be somewhat versed; he may indeed comprehend the principles of the profession without it, but it is in such constant use, and there are so many Latin medical books, both in our own and in foreign countries, that a knowledge of this language can scarcely be dispensed with. Translations indeed generally appear to supply this deficiency, but there is nothing so satisfactory as the perusal of a book as it comes out of the author's own hands; and besides, it may and often does happen, that works of great merit remain untranslated for a great length of time, so that here a considerable impediment to the acquisition of knowledge may occur to a person ignorant of the Latin tongue.

On the same ground we would recommend a knowledge of the French, sufficiently, at least, to enable the pupil to read and understand it perfectly. In this language many veterinary works have been published; and the Latin he will find extremely useful, since it affords many

principal sources from whence information in chirurgical matters may be procured. Some considerable advantages may likewise be reaped from the study of books written in the German language, translations of which have never appeared.

For these reasons, all gentlemen who apply themselves to veterinary surgery, and who are acquainted with none but their native tongue, should acquire a knowledge of other languages; a task they will find by no means difficult, since a critical knowledge of them is not required. There is at least an obvious necessity for such a progress as will enable them to range through foreign fields, as well as through their native meadows, and prevent the choicest flowers of the former from escaping their observation entirely.

The next and most important acquisition is a knowledge of *the powers and properties of medicines*. The various substances of the *materia medica*, the different classes of the vegetable, mineral, and animal kingdoms, so far as they relate to physic, supply all the several applications used in veterinary surgery. If therefore we are ignorant of the qualities of these substances, we may commit the grossest mistakes in the use of them. Instead of an emollient, we may apply an escharotic; and instead of a stimulating application, we may perhaps prescribe a sedative. Without this knowledge it is impossible to practise our profession with any degree of credit or success; though by some it may possibly be argued, that we should have learned these things equally from experience. If there be any who are disposed to take what they hear for granted, and can sit down satisfied with being told that such and such things are so, without being anxious to enquire into the reasons why they are so; if, when they have it in their power to investigate the true principles upon which the action of any medicine is founded, they neglect the opportunity of being acquainted with them, and, like mere empirics, inattentive to the peculiar habit of the animal, or the variety of appearances so frequent in the same disease in different subjects, content themselves with knowing that any one medicine has been used with repeated success in the same case: to such we can only say, that the practice of the veterinary art is very improper for minds so supine and uninquisitive. Nothing can be more necessary therefore than a knowledge of the *materia medica*, and consequently of veterinary pharmacy, which is nothing more than the art of mixing the several articles of the *materia medica*, so as to produce

combinations capable of effecting what cannot be done by any solid or fluid substance singly.

The last point to be insisted on as demanding particular attention, is the study of anatomy. The bodies of quadrupeds being the subject of our operations, how shall we be able to perform them properly, if we are ignorant of the construction of the machines on which we are to work? *A complete and thorough knowledge of comparative anatomy* it is therefore absolutely necessary to acquire; and the method to be pursued in order to attain it must be the work of our own hands. Mere aural instruction is not sufficient; we may attend the most ingenious and instructive lectures in anatomy, without being fitted for the exercise of our profession.—It is therefore necessary for us to dissect, to trace and inspect, the several parts of animals with our hands and eyes; and thus, with care and assiduity, we may get sufficiently acquainted with their structure and formation to attempt any operation that is required. Upon this very essential point the young student must spare no pains, nor ever let slip an opportunity of dissecting whenever it may accidentally present itself. Besides the proper anatomical knowledge that cannot but be acquired by this means, he will reap another and very considerable advantage from it: the practice of frequent dissection will make the use of the knife easy and familiar, so that when he is obliged to apply it upon the living body, it will be done with greater dexterity, and consequently much more to his own satisfaction, as well as to that of the bystanders.

But the study of anatomy does not stop here; it is an extensive field, which, when diligently explored, opens a prospect comprehending the whole unbounded hemisphere of science. It is not enough that we should know the names, situation, and connection of the several arteries, veins, nerves, muscles, tendons, and other constituent parts of the animal frame; we must also learn their respective powers and uses. We must be well versed in veterinary physiology; for, if we are ignorant of this, how shall we be able to determine when any of the functions of the animal economy are interrupted or destroyed by contusions, wounds, or other accidents, the particular part on which the injury has fallen? If, for instance, we are ignorant of the action of the diaphragm, in the office of respiration, how can we possibly have any conception of the symptoms attending a wound of that muscle? Physiology therefore is of infinite use to a surgeon, in indicating the diagnostic signs of the injuries the internal parts may have suffered; and by this he may be led, not only to form his prognostic with



judgment and precision, but also to distinguish where the remedy should be applied, if the case be within the assistance of his art.

Now that we have enumerated the several requisites and accomplishments which constitute a good surgeon, what shall we think of those persons who have endeavoured to lower the rank of this branch of the veterinary profession, by asserting that surgery itself is a mere mechanical art, and improperly dignified with the appellation of a science? Does then the penetration by which the surgeon discovers injuries concealed from the senses, does the knowledge which conducts his hands in the nicest operations, does the salutary resolution with which he separates parts otherwise destructive to the whole machine; do all these wonderful assistances, so beneficial in preserving life and health, entitle him only to be ranked among the meanest mechanics? Does the use he makes of his hands depreciate the powers of his understanding? Or, are the actions of the body inconsistent with the powers of the mind? Surely no; surgery and science are inseparable from each other. It is founded on principles, the application of which, in many instances, demands the utmost sagacity and penetration; and, after all, these are no more than elementary principles, since the mind, which has already assiduously collected and stored itself with these fundamental truths, has then a second task to perform, to wit, the extension of its power in the application of them. Its utmost activity must here be exerted in separating or combining these principles, and adapting them, with a variety of intentions suited to the different circumstances of disease, and the complicated appearances which are liable unexpectedly to occur. Indeed, where nature, and not the surgeon, performs the work, a servile imitation of the practice of others may seem to succeed; and even abscesses, ulcers, and many other surgical disorders, may yield to our applications as it were by chance: but, not knowing on what principles these cures take place, we cannot arrogate to ourselves any merit in a favourable event.

VETERNUM, the anasarca. See DROPSY.

VETERNUS, a lethargy. See LETHARGY.

VIBICES. When an ecchymosis happens, and forms only small spots, they are thus named.

VICES, in horses. In order for the prevention and cure of these, the following directions are given in the *Sportsman's Dictionary*. Whether they are judicious, or otherwise, we leave to the judgment of those better acquainted than ourselves with this branch of our subject.

"If a horse carries his head or neck awry, strike him twice or thrice with the contrary spur; but if he be very stiff-necked on the right side, and plying or bending on the left, hold the right rein shorter than the other, and when he inclines that way give him sudden checks, having a sharp wire fastened in the reins, that striking in his neck he may be compelled to hold it straight, taking care to check him upwards lest he should get a habit of ducking down his head.

"If a horse is apt to shake his head and ears upon the least occasion, or move his ears when he begins to kick or bite, or throw you, strike him on the head with your switch, and at the same time give him a check with your bridle and a stroke with the contrary spur, putting him suddenly out of his pace; then make him stop that he may have leisure to understand your meaning; and do the same when he starts or when he winches, which is a sign of his designing to bite or strike with his heels.

"If a horse ducks down his head, check him suddenly with the bridle, and strike with the spurs that he may be sensible of his fault. If he be standing, make him bring his head into its right place as he stands; and when he obeys cherish him, and he will soon understand the meaning of this correction.

"If a horse be skittish and apt to start, so that you are never free from danger while you are on his back, in case it proceeds from a weak sight, whereby objects may be represented to him otherwise than they really are, give him time to view them well, and then ride him up gently to them; but if he be naturally fearful, and ready to start at the hearing strange sounds, you must inure him to the noise of guns, drums, trumpets, &c. and in time he will like them.

"If a horse be restive and refuse to go forwards, pull him backwards, and perhaps he will then go forwards; and though he rebel a long time, the whip and spurs will prevail with him at last, if they be given smartly and in time. When once you begin, you must continue them till he submit, provided it proceeds from stubbornness, and not from faintness or indisposition of any kind.

"If a horse rears on end, that is, rises so high before as to endanger his coming over upon his rider, give him the bridle, and lean forwards with your whole weight, giving him both your spurs as he is coming down; but forbear to spur him as he is rising, for that may cause him to fall over backwards.

"If he be subject to fall down upon the ground or in the water, nothing is better than a

pair of good spurs applied when you first perceive he is about to do so. This will rouse him from doing it, and if he desist, do not correct him again at that instant, for bad horsemen occasion most of these vices by correcting *unduly* or *out of time*; by doing which they are so far from making a horse sensible of his fault, that they frighten him, put him into confusion, and cause him at last to become restive.

"If a horse is apt to *run away*, you must be gentle; keeping a slack curb and an easy bridle-hand. First walk him without stopping, but only staying him by the head by little and little; then trot him a while, and put him again from a trot to a walk, staying him by degrees, and always cherish him as soon as he obeys. When peaceable, put him off from his trot to a gentle gallop; from that to a trot; and from a trot to a walk, staying him by degrees with a steady hand. By using this method for some time with judgment and patience, it is very likely you may cure him of this vice.

"If a horse be apt to *fly out* violently, it is certain that the more you pull the bridle rein, and hurt him by straitening the curb, the more he will tug and run the faster. In this case, therefore, if you have field-room enough, whenever you find him begin to run, let him go, by slackening the bridle and giving him the spur continually and sharply till he begin to slacken of his own accord. By treating him in this manner, it is not to be doubted but you will cure him at last, there being no remedy like this for a runaway horse."

Some horses will not *endure the spurs* when they are given them, nor go forwards, but as it were will cleave and fasten to them, strike out and go back. If you press them hard they will begin to stäle, and will not stir from the place. If a gelding, it is sometimes difficult to break him of this humour; but a stone-horse perhaps may be cured under the conduct of a good horseman. Yet if he again take to the same trick in other hands, and once get the mastery of his riders, he will be very apt to relapse. Indeed, every gelding, stone-horse, or mare, that does not fly with the spurs, but obstinately cleaves to and kicks against them, may be looked upon as of a cross and dogged nature, and should therefore be absolutely rejected. See HORSEMANSHIP.

VICIA, the tare or vetch, a genus in Linnæus's botany. Of species, there are twenty. They form an useful article of food for cattle. See the articles VETCHES, SOILING, and FOOD.

VILLI, in anatomy, are nearly the same as in botany, viz. small hairs like the grain of

plush or shag. With these some leaves abound; and, in like manner, we see villi on the internal surfaces of the stomach, intestines, œsophagus, &c.

VINCA, perriwinkle, a genus in Linnæus's botany. He enumerates five species. One of these has been reputed, in France, as a remedy for the glanders. See GLANDERS.

VINEGAR, a well-known vegetable acid liquor, made from vinous or saccharine juices by submitting them to the acetous fermentation. Vinegar is a cheap and excellent topical application for inflammations, bruises, strains, and such-like accidents. Gibson proposes to augment its astringency by the addition of bole; but we rather recommend such additions to it as alum, crude sal ammoniac, or some of the vitriolated metals. Speaking of vinegar and bole, Gibson says,

"This is as proper as any thing to bathe a swelling that comes by a bruise or any other common accident. The surgeons mix water with the vinegar, which is their oxycrate, perhaps the better to incorporate the bole with the mixture; but the fibres of a horse are so rigid, that they require the vinegar in its full strength. I find also from experience, that good vinegar is preferable to *verjuice*, unless it be extremely old, and at the same time has no ways lost its acid; because the vinegar being for the most part thinner, and not altogether so viscid as the verjuice, penetrates the part to which it is applied, more easily, and therefore often proves more efficacious; and in some cases *distilled vinegar*, or vinegar mixed with a small portion of spirit of vitriol, is to be preferred where stronger acids and more intense coolers are required. A cold charge is also a very proper application in intentions of this kind, especially to the back, withers, and other parts, when they have been bruised with the saddle. This is made of vinegar, bole, and the whites of eggs, to the consistence of a poultice, and spread over the aggrieved part. A cold charge is also proper to be laid to swellings on the joints, or anywhere on the limbs, when they proceed from strains, bruises, and such-like accidents; but this requires to be oftener renewed than is generally done, being apt to become dry in a little time, especially while the heat and inflammation continue, and after this a constant use of bole and vinegar will in most cases effect a cure."

VIRUS, signifies strictly any poison. Hence, *virulent* is a term used for a distemper which is attended with dreadful symptoms.

VIS VITÆ, a term used particularly by



Boerhaave, to signify the joint action of all the parts of the human body, whereby the machine is continually recruited and put in order. But when any thing proves too hard to be conquered by this force, a disease ensues; nature is overburthened, and if it cannot be lessened or thrown off, the disease either proves mortal or becomes incurable. On the same authority we have the

**VIS CONSERVATRIX**, the preserving power, or the exertion of the plastic power, as far as it maintains organization.

**VIS GENERATRIX**, the generative power, or the generative exertion of the plastic power.

**VIS MEDICATRIX**, the healing power, or the plastic power employed in extinguishing disease, and restoring health. This is often expressed by the words *nature* and *natural cure*.

**VIS INSITA**, a term applied to the muscles, signifying the natural contractility of the moving fibres.

**VIS INERTIÆ**, that innate force of matter by which it resists any change, and endeavours to preserve its present state of motion or rest.

**VISCERA**, signifies any of the bowels or entrails. The lower have been, by old anatomists, divided into three kinds, viz. *Chylopæa*, *Uropæa*, and *Spermatopæa*, or parts serving for the preparation of the chyle, the urine, and the seed. The moderns, however, make use of the two general divisions of *thoracic* and *abdominal*; including, in the former, the heart, lungs, &c. in the latter, the stomach, liver, spleen, pancreas, and intestinal canal. In the articles **ANATOMY**, **ABDOMEN**, **THORAX**, &c. these are described; but the following concise account, drawn from a different source, may nevertheless be acceptable.

1. *Viscera of the chest*.—On raising up the sternum of a horse, there appears a smooth polished membrane, the pleura, attached to its upper surface. This membrane is there double, but unites about an inch above the sternum: and the space between the double reflection is filled by cellular substance posteriorly, and by the thymus gland anteriorly.

This space is called the *inferior mediastinum*: the two lamina then separating, pass over the pericardium, and over the vessels, to be reflected on the lungs. After having passed over the lungs, one portion goes over the spine on one side, the other portion over the spine of the other side; leaving in this division a tubular opening, filled by the aorta, cava, vena azygos, thoracic duct, and œsophagus. This forms the superior mediastinum. There are therefore two reflections of the pleura on each side; one close under the ribs, the other in contact with the lungs. A bag is formed by this reflection; but

the lung is not contained within it as is usually described, but a small quantity of water, the liquor pleuræ.

If this bag be cut into, the lung on that side is rendered for a time useless, by the air being admitted and preventing its expansion; but the distinct separation formed by the reflections of the pleura, preserves the functions and powers of the other lung entire: without which wise provision, accidents and diseases of these parts would be more injurious and more frequently fatal. The pleura has few arteries and veins; nor has it much sensibility, if any, when uninfamed: but under inflammation, as is seen in pleurisy, peripneumony, &c. it has a great degree of it.

The *mediastinum* is simply the junction of the two lamina of the pleura, dividing by distinct partitions the cavity of the chest.

At the anterior and inferior division of the pleura, is situated the thymus gland; being under the aorta and vena cava, near to their first divisions. It appears composed of two lobes of considerable magnitude, and faintly red in the colt; but much darker and less in size in the grown horse; and scarcely discernible in old age. It was thought to be largest in size some months after foaling; but it is now proved to exist larger in the foetal colt previous to birth, than at any period afterwards. From this, though its use is not fully understood, it appears more essential to the existence of the animal previous to birth than afterwards. It is supplied with vessels called arteriæ and venæ thymicæ, and with nerves from a neighbouring plexus.

The *lungs*, when inflated, are said to resemble the figure of the cloven foot of the ox. They are spongy in their texture, being every-where full of little cavities, which are the minute ramifications, or distribution of vessels termed bronchial, arising from one common trunk called the trachea or windpipe. By means of these vessels, air is received throughout the substance of the lungs; depositing its oxygene, it is returned from thence, and fresh air admitted. The lungs move freely within the chest, or rather readily obey its motions. In this they are assisted by their being divided into lobes or separate portions; and further, by the fluid contained. In both the living and dead state, they leave no space between their surfaces and that of the inner part of the chest; but are always distended by the air to the capacity of the cavity. Their functions and particular structure are more fully explained under **ANATOMY**.

Between the lungs is placed the heart, sup-

ported in its situation by various attachments. It is covered by a membrane called pericardium.

The *pericardium* first loosely invests the heart, then passes close over its surface, giving it a second covering. Between the one reflection and the other is contained a quantity of water, called liquor pericardii. The pericardium, where it loosely invests the heart, is more dense than the pleura. It has few arteries or veins, and apparently little sensibility. Its internal surface is that which pours out the liquor pericardii.

The *heart* is of an elliptical form : its anterior and superior part is called its basis ; its posterior and inferior part its apex. The basis is confined by vessels ; the apex is loose, and strikes against the intercostal muscles, giving the pulse from the heart. It has four cavities within it : two placed in the right side, and two in the left. The first are for the circulation through the lungs ; the second for that through the other parts of the body. The cavities on the right are divided from those on the left by a septum or partition. For a more particular description of this organ with its functions, see the articles **HEART** and **CIRCULATION**.

Fig. 1. in plate XXIX. represents the abdominal viscera, or contents of the belly, that appear immediately on the integuments being removed ; and such of the thoracic viscera, or contents of the chest, as become evident on raising the sternum. *aaaaa*, shew the skin. *bbbb*, the integuments thrown back, consisting of muscles, tendons, and peritoneum. *cccc*, the most extensive of the large intestines, called the colon. *ddd*, the ligamentous bands of the colon drawing it into folds. *e*, one of the small intestines. *ff*, the diaphragm, a large muscle, dividing the chest from the abdomen. *ggg*, the lungs. *h*, the heart. *iii*, the pericardium, a bag surrounding the heart, containing a quantity of fluid ; it is here opened to shew the heart. *kk*, the ribs. *ll*, the sternum. *m*, the ensiform cartilage.

2. *Viscera of the abdomen*.—The cavity of the belly is much the largest, forming, when its contents are removed, an extensive oval vault ; bounded anteriorly by the diaphragm, posteriorly by the bones of the pelvis, superiorly by the vertebræ, laterally by the ribs, and inferiorly by the abdominal muscles ; so that the superior and anterior part is generally called the back, and posteriorly the loins ; the lateral parts the sides, more posteriorly the flanks ; and the inferior portion, throughout its whole length, the belly. But these divisions being more properly exterior, and withal too indeterminate, it was necessary

to make others, that the situation of the viscera, or the peculiar part of the abdomen affected under disease, might be easily described : and these divisions are now generally received and made use of.

The abdomen is divided into four regions. The epigastric, umbilical, and hypogastric inferiorly ; and the lumbar superiorly. In the human, these again admit of subdivisions ; but those we have already mentioned are sufficient to answer every useful purpose in the horse.

The epigastric region begins at the ensiform cartilage or end of the breast-bone, and extends to within about six inches of the umbilicus or navel : within its limits are situated the liver, the stomach, the pancreas, parts of the colon, of the spleen, of the duodenum, of the aorta, and vena cava.

The umbilical region begins where the epigastric ends, at about six inches before the navel, to the same distance behind it ; so that its extent is about twelve inches. It contains great part of the small intestines, the cœcum, parts of the colon, of the aorta, and vena cava, with a portion of the mesentery, and omentum.

From the extent of the umbilical region, that is six inches behind the navel, to the bottom of the pelvis, and whole posterior part of the belly, is the hypogastric region ; containing the rectum, bladder, part of the colon, the iliac vessels, and parts of generation.

The lumbar region is that which is situated as it were upon these ; and is formed from the hollows left on each side of the spine, from the beginning of the abdomen nearly to the end. It includes the kidneys and their appendages, the emulgent vessels, part of the ureters, and greater part of the spleen.

The whole of the abdominal cavity is lined by a membrane, which is termed peritoneum ; it not only lines the cavity, but invests the whole of its contents, by being reflected over them. It possesses but few vessels or nerves ; when wounded therefore it bleeds but little, nor does it afford much pain, except under inflammation, when it becomes very sensible. It secretes a fluid of a serous nature for the lubrication of the viscera, and for the prevention of adhesions ; this may become so much increased in quantity as to cause dropsy. By its attachments it preserves the parts it invests in their proper and true situation, which seems to be its principal use.

The viscera of the belly are divided usually into three classes : 1. Those destined to convert the food into nutriment by forming the chyle ;



2. The parts concerned in the formation of urine; 3 The organs contributing to the formation and growth of the colt.

The first class is by far the most extensive and numerous, comprehending the stomach, intestines, liver, pancreas, spleen, thoracic duct, omentum, and mesentery. The second class takes in the kidneys, renal glands, the ureters, urinary bladder, and urethra. The third class comprises, in the male, the vasa deferentia, the vesiculæ seminales, testicles, and penis. In the female, the ovaria, uterus, and vagina.

The principal organ concerned in digestion, or the converting the food into nutriment, is the stomach. This is a bag whose internal surface in the horse is partly membranous, and partly cuticular; in form resembling a bagpipe, but not so much so in the horse as in the human. It is situated behind the diaphragm, across the left side of the abdomen, within the epigastric region; its right portion covered by the liver, its left by the spleen, and its whole inferior surface rests on the small intestines. The stomach has two curvatures; a greater and a lesser: it has likewise two openings, a recipient, called *cardia*, on its left, and an expellent, named *pylorus*, on its right portion near the spine.

To the recipient orifice is attached the œsophagus, a membranous and muscular canal, conducting the food from the mouth through the throat and thorax into the stomach (see STOMACH); where it undergoes the necessary changes for taking it into chyle, that milky fluid which is formed up by the lacteal vessels for the nourishment of the body. See LACTEALS.

The *intestines* are a long membranous tract or canal, beginning at the expellent orifice of the stomach, and receiving its digested contents. They form many circuvolutions round the abdomen, and at length end at the anus. They are divided into small and large. The small intestines are the duodenum, jejunum, and ileum. The large intestines are the cœcum, colon, and rectum. The intestines are bound down to the spine by the mesentery, which is a production of the peritoneum, but the intestines have yet room sufficient for performing the motion termed peristaltic.

The peristaltic motion is a gradual contraction of the intestines from before backwards, thereby expelling their contents. This force alone not being sufficient for the expulsion of the feculent matter, nature has still further assisted the animal with a fluid that serves as a stimulus to the intestines. This is generated within the liver.

The *liver* is a large gland situated behind the diaphragm; the greatest part in the right side of the epigastric region, divided into seven lobes. It separates from the blood a fluid called bile.

The *bile* of the horse is not contained in a reservoir or gall bladder, as in most other animals; but is constantly furnished to the intestines by means of a duct entering into the duodenum called the gall duct.

The *pancreas* is a long glandular body attached to part of the duodenum and stomach, and lying across the spine. It secretes a fluid called pancreatic juice. Its duct enters the duodenum with the gall duct. This fluid is supposed to assist in diluting the contents of the intestines.

The *spleen* is a soft spongy viscus of a blueish colour, which is found to differ in size in different subjects. It is attached to the stomach by vessels; it extends down the left side to the kidney of that side, to which it is attached. Its excretory duct has not yet been discovered, and this renders its use doubtful; it is however thought to assist in digestion.

There is continually separating from the blood an aqueous saline fluid named *urine*. This is effected by means of the kidneys, which are two glandular bodies, situated one on the right, the other on the left, side of the lumbar region. They differ a little from each other in shape. The right approaches a triangular form; but the left resembles, as in the human, the shape of a kidney bean, and is situated a little more posteriorly than the right.

The *ureters* are the excretory ducts of the kidneys; extending to the lateral and superior parts of the bladder, into which they are inserted.

The *bladder* is a bag or reservoir for the urine. It is situated in the cavity of the pelvis, with its largest extremity towards the abdomen, and its smallest, or neck, towards the buttocks. When the bladder is distended to a certain degree it contracts, and the urine is forced out through the urethra.

Fig. 2. in the plate represents the two cavities of the chest and belly; with such of their contents as are immediately seen, when the parts represented in the former plate (the heart, lungs, and intestines) are removed. *A*, the stomach nearly in its natural situation; upon its surface are seen its vessels. *BBB*, the lobes of the liver. *C*, the omentum or caul, attached to the stomach throughout its whole length, covering the pancreas entirely, and in part the spleen. At one part it is held back by a pin, forced into the



Viscera of the Horse.







substance of the spleen, to shew the renal gland. *D*, the spleen. *EE*, the kidneys. *F*, part of the rectum. *GG*, the ovaria. *H*, the uterus, or womb. *I*, the bladder distended with urine. *KK*, the diaphragm, or midriff, a large muscle dividing the chest and belly. *aaa*, the aorta descendens, seen in both cavities. *b*, vena cava descendens; it is not seen plainly in this view in the chest, therefore is not distinguished. *cc*, the emulgent veins, emptying their blood into the vena cava. *dd*, the emulgent arteries arising from the aorta. *ee*, the spermatic arteries and veins united by a cellular substance soon after their origin, distributed to the ovaria. *ff*, the ureters arising from the kidneys, and inserted into the sides of the bladder rather superiorly. *gg*, the iliac vessels, being the bifurcations of the aorta and vena cava. *hh*, the cavity of the pelvis. *i*, part of the duodenum or first intestine, with which the pyloric orifice of the stomach is united. *k*, the gall duct seen arising from the liver, and inserting itself obliquely into the duodenum. *l*, ligamentum suspensorium, one of the ligaments attaching the liver to the diaphragm. *mm*, capsulae renales or renal glands, described in old anatomical books as auxiliary kidneys, receiving vessels from the emulgent artery and vein. *nn*, the œsophagus, or canal for the passage of the food into the stomach. *o*, the ascending aorta. *p*, the ascending vena cava. *q*, the division of these vessels into branches, the principal of which are, *rr*, the subcostal arteries cut off, furnishing with blood the fore legs. *ss*, subcostal veins cut off, returning the blood from the fore legs. *tttt*, jugular veins returning the blood from the head. *uuuu*, carotid arteries carrying blood to the head. *v*, a pipe supporting these last vessels, to render them more distinct. *ww*, the trachea or windpipe, the portion entering into the chest is removed. *x*, the œsophagus or gullet, brought from its situation behind the trachea, and supported with a knife. *yyyy*, the integuments of the abdomen thrown back.

**VISCIDITY**, or **VISCOSITY** (from *viscum*, *bird-lime*), the quality of any thing that is viscid or viscous, that is, glutinous and sticky. Viscid bodies are those which consist of parts so implicated within each other, that they resist a long time a complete separation; and rather give way to the violence done them, by stretching or extending every way. The humours of the body and blood itself, from a variety of causes, it is said, become viscid.

**VISCUM**, bird-lime.

**VISION**, the sight of surrounding objects. Light may proceed either from the sun, or any

other lucid body, from whence the rays spread every way, as from a centre to all points of a sphere. These rays fall on the surfaces of bodies, from whence again they are reflected to the eye in angles equal to that of their incidence, so as to render the bodies from whence they thus flow perceptible to the eye and in their proper colours. The organ of vision is the eye. See **EYE**.

**VISUAL POINT**, is in the horizontal line, wherein all the issuing rays unite, as when a person stands in a straight long gallery, wherein looking forward, the sides, floor, and ceiling, seem united, and touch one another in a point or common centre.

**VISUAL RAYS**, those that strike the retina in vision. See **VISION**.

**VITRIFICATION**, the changing any thing into glass.

**VITRIOL**, a saline concrete composed of a metal, united with the vitriolic acid. There are three metals with which this acid is found naturally combined, zinc, copper, and iron: with the first it forms a white, with the second a blue, and with the third a green, salt. The greatest quantities of these vitriols are the produce of art. The name vitriol is popularly applied to all salts that are formed of a metal or metallic basis, and the vitriolic acid. Vitriols are thus formed of the perfect, the imperfect, and the semi-metals, which have now the epithet of *vitriolated*, as vitriolated zinc (see **ZINC**), vitriolated copper (see **COPPER**), &c.

**VITRIOLIC ACID**, called formerly *oil of vitriol*. This acid was formerly obtained by distillation from vitriol of iron; but is now produced by the combustion of sulphur. In this operation there are three conditions required. Oxygene must be present, to maintain the combustion; the vessel must be close, to prevent the escape of the volatile matter which rises; and water must be present, to imbibe it. For these purposes a mixture with eight parts of sulphur and one of nitre is placed in a proper vessel, inclosed within a chamber of considerable size, lined on all sides with lead, and covered at bottom with a shallow stratum of water. The mixture being set on fire, and shut up, will burn for a considerable time, by virtue of the supply of oxygene which nitre gives out when heated; and the water, imbibing the sulphureous vapours, becomes gradually more and more acid, after repeated combustions, and the acid is afterwards concentrated by distillation.

Pure vitriolic acid is colourless, and emits no fumes. Its specific gravity, to that of water, is, as 1850 to 1000. It strongly attracts water,



which it imbibes from the atmosphere very rapidly, and in great quantities, if suffered to remain in an open vessel. If it be mixed with water it produces an instantaneous heat, nearly equal to that of ebullition. Its action upon all earths, except the silicious, upon alkaline salts, upon many metals, and almost every other combustible substance, is very strong; and, in fact, it possesses the general properties of acids in an eminent degree.

Vitriolic acid is used *externally* in the cure of eruptions, also as a rubefacient in local affections, in form of an unguent, by adding to lard or any mild ointment one eighth part of the acid. If applied unmixed, the greatest caution must be observed; as Mr. Coleman found, on rubbing it freely on the skin of a horse, that it destroyed the part without inflammation, and occasioned a deep sloughing. *Internally*, we have had no experience of its effects on brute animals.

VIVES, or IVES. See IVES.

VIVIPAROUS (from *vivus*, *alive*, and *pario*, *to bring forth*), are all such creatures as bring forth their young living and perfect.

VOLATILES, such substances whose parts are capable of dispersion by different degrees of heat. See SUBLIMATION. Of this class are certain solid as well as fluid remedies, well known in medicine. Such are *volatile sal ammoniac*, *flowers of benzoin*, *spirits of hartshorn*, &c.

VOLTE, in the manege, signifies a round or circular motion, consisting of a gait of two treads, made by a horse going side-ways round a center, in such a manner, that these two treads make parallel tracks; one by the fore-feet, larger; and the other by the hinder feet, smaller; the shoulder bearing upwards, and the croupe approaching towards the center. Sometimes the volte is of one tread, as when a horse makes volts in corvets, and in caprioles, so that the haunches follow the shoulders, and move forwards on the same tread. In general, the track of the volte is sometimes made round, sometimes oval, and sometimes a square of four straight lines, so that these treads, whether round or square, inclose a terrain or manege ground, the middle of which is sometimes distinguished by a pillar, or else by an imaginary center, which is supposed, in order to regulate the distances, and the justness of the volts.

A *demi-volte* is an half round of one tread or two, made by the horse at one of the angles of the volte; or else at the end of the line of the passade: so that being near the end of this line, or else one of the corners of the volte, he changes hands to return by a semicircle to

regain the same line. When he does not return upon this line, they say he has not closed his demi-volte.

*Demi-voltes of the length of a horse*, are semicircles of two treads, which a horse traces in working side-ways; the haunches low, and the head high, turning very narrow; so that having formed a demi-round, he changes the hand to make another, which is again followed by another change of hand, and another demi-round, which crosses the first. This demivolte of a horse's length is a very pretty manege, but very difficult, if we compare it to a figure of eight.

*Demi-volte of five times*, or *passade of five times*. See PASSADE.

A *reversed volte*, is a track of two treads made by the horse with his head to the center, and his croupe out, so that he goes side-ways upon a walk, trot, or gallop; and traces out a small circumference with his shoulders, and a larger one with his croupe. Reversed volts upon a walk, appease and quiet unruly horses, if they are made methodically.

The *six volts* are made *terra a terra*; two to the right, two to the left, and two to the right again, all with one breath, observing the ground with the same cadence, working short and quick, and ready, the fore hand in the air, the breech upon the ground, the head and tail firm and steady.

VOMER. See MAXILLA SUPERIOR; also Plate V. and the description of bones "*in the head*," under BONES.

VOMICA, is used for any collection of matter in the lungs of an animal; but in strictness it signifies an ulcer there, which discharges a concreted matter, sometimes mixed with blood from a corrosion of the vessels.

VOMICA, NUX. See NUX VOMICA.

VOMITING, the act of discharging the contents of the stomach by the mouth. Of this the horse is incapable, on account of a peculiarity of structure. See STOMACH. Dogs, cats, and other animals, however, vomit very readily.

VULNERARIES (from *vulnus*, *a wound*), healing medicines. It denotes also a fever in consequence of a wound, that is, a symptomatic fever.

VULNUS, a wound. Boerhaave describes a wound to be a recent bloody solution of continuity in the soft parts made by a hard sharp instrument. See WOUND.

VULVA, a name given to the external parts of generation in female animals. It is called the *bearing* in a cow.

# W.

## W A R

**W**ALK, one of the paces of a horse. It is the slowest and least raised of all, and performed, as any one may observe, by the horse's lifting up his two legs on a side, the one after the other, beginning with the hinder leg. Thus, if he leads with the legs of the right side, then the first foot he lifts is the far hind-foot, and in the time he is setting it down (which, in a step, is always short of the tread of his fore-foot on the same side) he lifts his far fore-foot, and sets it down before his near fore-foot. Again, just as he is setting down his far fore-foot, he lifts up his near hind-foot, and sets it down again just short of his near fore-foot; and just as he is setting it down, he lifts his near fore-foot, and sets it down beyond his far fore-foot. This is the true motion of a horse's legs in a walk; and this is the pace in which many things are best taught in the manege. For instance, when the horse is to be taught to turn to the right and left, or from one hand to another, he is first to be taught it on the walk, then on the trot, and finally on the gallop.

**WALL-EYES**, in a horse, are those in which the iris is of a very light grey colour. These are not deemed handsome; but Gibson says, that horses which have wall eyes are generally good.

**WARBLES**, in a horse, are small hard tumours, or swellings, upon the saddling part of a horse's back, occasioned by the heat of the saddle in travelling. They are cured by bathing them often with the following mixture.

Take of Spirit of wine, two ounces;  
Oil of turpentine, half an ounce;  
Tincture of myrrh, with aloes, two drachms. Mix.

**WARRANT**. A jockey that sells a horse is frequently required to *warrant* him; that is, to refund the money that was given for him in case he sells him when under such infirmities as

may not be capable of discovery on the view of the buyer. But he does not warrant him clear of such infirmities as may be seen and discerned; for the rule of law in England is, *caveat emptor*, unless the seller expressly warrants. See **BUYING**.

**WARTS**, are of the same nature with scratches, rat-tails, and other excrescences of the legs and pasterns in horses, and are more or less hurtful, as they are situated nearer, or at a distance from, the larger sinews. See **SCRATCHES**, **RAT-TAILS**, &c. Warts may be destroyed by touching them with any caustic; or they may be cut off, when they are superficial.

**WATER**. See **AQUA**. Water becomes rarefied by heat, is augmented in bulk, and quickly disperses in vapour, when the degree of heat is incapable of bringing it to a state of ebullition. When water boils with great bubbles in the open air, it has received the greatest degree of heat that it can sustain in open vessels. This is demonstrated by immersing Fahrenheit's thermometer in it, when it rises to 212. But when it is confined and not suffered to evaporate, as in Papin's digester, it acquires heat enough to melt a piece of lead or tin, suspended in its centre, and to decompose vegetable and animal substances, nearly in the same manner as when they are analysed in a retort. Water undergoes no decomposition nor alteration in any chemical experiment, though it is known to consist of oxygen and hydrogen, and may be artificially produced.

Water, when saturated with one salt, is capable of dissolving a considerable portion of another salt; and when saturated with this also, it may still dissolve a third, a fourth, or more salts. According to Neumann, four ounces of water, that had been saturated with a drachm and some grains of alum, will still dissolve five drachms of nitre, then half an ounce of green vitriol, six drachms of common salt, three



drachms of soluble tartar, and five drachms of sugar.

Hard waters are known by soap curdling when dissolved in them: they contain earthy or saline matter, and sometimes metallic.

Mineral or medicinal waters are such as differ so much in their temperature, or hold minerals in solution in such quantity, as to produce some sensible effects on the animal economy.

Silicious earth is suspended in them in extremely small quantity; but aluminous earth in such quantity as sometimes to give water a pearly colour and greasy feel. Hence those waters have been called saponaceous. Barytes, magnesia, lime, and fixed alkalis, are never found in water pure, but often combined with acids. The same occurs with ammoniac, and most of the acids; yet carbonic acid is often found in waters pure. These waters are called gaseous, spirituous, or acidulated. Neutral salts are seldom found, except sulphate of soda (*Glauber's salt*), muriate of soda, muriate of pot-ash, and carbonate of soda. Of earthy salts, sulphate of lime, calcareous muriate, chalk, sulphate of magnesia, muriate of magnesia, and carbonate of magnesia, are most common. Alum is sometimes found pure, sulphur has not been found; small quantities of sulphur of soda have. Sulphurated hydrogenous gas commonly mineralizes sulphureous waters. Iron is more frequently found in mineral waters than any other metal, combined with carbonic or sulphuric acids. Arsenic, sulphate of copper, and of zinc, are found in many waters, rendering them very noxious.

**WATER-FARCY.** See **FARCY**. This disease has no resemblance to a true farcy, either in its cause, symptoms, or effects, and has only obtained this name through custom and ignorance.—This water-farcy, then, is nothing more than an *œdema* of the skin, which often happens in epidemical colds. In some cases it appears more generally dropical, and the water is not confined to the belly and limbs, but shows itself in several parts of the body by soft swellings yielding to the pressure of the finger. The last kind generally proceeds from foul feeding, or from the latter grafts. In the former case, we see the limbs and whole body enormously swell, and become very hard, the belly and sheath greatly distended; yet these may be reduced by slight scarifications within the leg and thigh with a sharp penknife, and three or four strokes on the skin of the belly on each side the sheath. A few purges afterwards will generally complete his recovery. In both cases the curative intentions are

to discharge the water, and brace up the relaxed solids throughout the whole body. To this end purge once or twice in ten days; and give intermediately either of the following:

Take of Black hellebore, fresh gathered, two pounds.

Wash, bruise, and boil it in six quarts of water to four; and then strain out the liquor, and put two quarts of white-wine on the remaining hellebore, and let it infuse, warm, forty-eight hours: then strain off, mix both together, and give the horse a pint night and morning.

Take of Nitre, two ounces;

Squills, powdered, three drachms to half an ounce;

Camphor, one drachm;

Honey enough to form them into a ball, to be given once a-day alone, or washed down with a horn or two of the above.

This is the course recommended by Gibbon.

**WATERING**, in the language of the stable, the supplying horses and other cattle with water at stated times. The properties of water as a suitable diluent of solid food are well known: but it is a matter of some consequence to be certain that the water given to animals is pure and uncontaminated with unwholesome particles, either in a state of simple mixture or of chemical union. That water may hold in solution many deleterious ingredients has been shewn under the article **WATER**; and the subject has been thought of so much importance by Mr. Clark of Edinburgh, as to induce him to treat of it in a separate chapter, in which he not only considers the diseases that horses are liable to from the constant use of unwholesome water, but also makes some judicious remarks on the management of horses, with regard to the hazardous practice of indulging them in drinking it cold, at improper times, or to a dangerous excess.

"Water," says he, "is the main diluter of the food and fluids in general. It likewise becomes the vehicle of all nourishment to the animal. On that account, we cannot be too curious about its qualities, nor delicate in our choice of it for our horses, as it partakes of the qualities of those bodies which it passes through. Whether they are metallic, saline, or earthy, &c. these foreign matters mix with the animal fluids, according to their different gravity and the capacity of the canals through which they circulate, and will, by the laws of motion, be deposited on one part or other.

"As the proportion of water which enters into the composition of animal fluids is considerable, so likewise is the proportion of fluids secreted. A large quantity of water diffused through the whole mass of fluids in the body, adds to its fluidity. Hence it will be obvious that constant and frequent supplies of water are not only necessary to dilute the food in the stomach, but the mass of fluids in general; as they, even in the most healthy state, have a constant tendency to putrefaction, and require constant supplies both of food and drink to keep them in a healthy condition.

"Those who have searched into the causes of disease in the human body, allege that some of the most obstinate of the chronic kind proceed, in a great measure, from the use of unwholesome water; and, by comparing the different strata of earth through which water passes about populous cities, they affirm, that, where the water is bad, those diseases prevail most. It is likewise thought that the disposition to gravel in the urine may be owing to the same cause. In like manner, water which contains mineral bodies, and metallic salts, is thought to enlarge the glands of the throat and jaws; and hence it is said, that the inhabitants about the Alps, &c. where the waters abound much with these qualities, are much disposed to glandular obstructions, and other serious maladies." These circumstances seem to warrant the conclusion, that those waters are not digestible, or that they do not assimilate or mix intimately with the fluids; and hence prove the source of calculous concretions, and of hard swellings, in different parts of the body.

The effects of unwholesome water upon the human body being thus evident, if the diseases of animals, particularly those of horses, were as thoroughly investigated, it is more than probable that they would be found equally hurtful to brute animals; for it is certain that they are subject to diseases which, in many respects, resemble those of the human body. We likewise find, upon dissecting their bodies, that they are subject to calculous concretions, and hard tumours, in different organs, and which may originate from the source we suspect.

Here our author adduces some proofs of the existence of urinary calculi in horses (for which see the article *BLADDER*), and quotes the opinion of Bracken, who, in his second volume of "*Farriery Improved*," when treating of the gravel, says, 'But the greatest cause of it (in my thoughts) is owing to their drinking such waters as, by running through various strata of

earth, are impregnated with stony particles. In short, whatever can bring on an accumulation of earthy, or rather tartareous, matter, in the urinary passages, whether by obstructing or lessening the capacity of the canals, or by immediately or remotely producing the substance itself, will cause gravel, and in time the stone.'

"It has frequently been observed," continues Mr. Clark, "that horses do not thrive on changing from one part of the country to another, although their treatment, in every respect, be the same, *the difference of water excepted*. This perhaps may, in a great measure, be owing to the quality of the water they drink, and which may be possessed of different qualities from that to which they had before been accustomed. This is particularly observed in those places where the stable yards are supplied from pit-wells, some of which are very deep, and the water very hard, which occasions that chilliness, trembling, and shaking, which frequently is observed in horses when they drink it immediately after it is new pumped, and which causes their coats to *flare*, and stand on end, for a considerable time, and sometimes they are griped, and seem greatly out of order.

"*Spring-water* is liable to partake of all the metalline or mineral strata through which it passes. Hence it becomes noxious or salutary, according to the nature of those substances with which it has been in contact.

"*River-water* has likewise its different qualities from the various soils through which it travels; but, in general, it is much softer than water that runs under ground, and therefore much fitter for use.

"*Well* or *pit-water* is subject to all the inconveniences of spring-water, with this additional circumstance, that it is generally hard, and, by stagnating long in the well, it may there take up from the bed it lies upon such particles as may render it more unwholesome; therefore the goodness of all well or pit-water is to be doubted, and particularly that which is taken from very deep wells.

"*Pond-water* (under which head may be included all stagnant waters, which generally proceed from rain), if lying on a clean or clayey bottom, and fresh, answers very well for cattle of all kinds; but, in warm weather, it is apt to corrupt and ferment, which renders it unwholesome, and the most uncleanly and disagreeable of any."

Mr. Clark is inclined to prefer, upon the whole, those waters "that are lightest, and



most readily break soap," as these easily digest and assimilate with the fluids of the animal.

"To correct the hardness of pit-water, and render it more salutary for horses to drink," he says, "it should be pumped into a large trough, and exposed to the open air for some time before it is used; or, if a cart-load or two of clay or chalk were thrown into the well, it would greatly improve the water. It has likewise been found, that breaking down a piece of clay, about the size of an apple, in a pailful of hard water, before it is given to horses for drink, morning and evening, has produced a considerable favourable change on the coats of horses. Indeed it will be found, that, where horses are obliged to drink hard water, they are, for the most part, rough-haired, and, at the same time, they will have a great deal of dusty matter at the roots of it, even although they should be well curried and frequently brushed; which plainly shows that there is some obstruction of the pores of the skin, which prevents the natural perspiration, and, of course, that shining appearance of the hair, which is observed in all horses that perspire freely. Hence it would appear that this cutaneous obstruction proceeds from the constant drinking of water of a bad quality.

"Water that is transmitted through limestone, although exposed to the open air in large ponds, will retain its hardness, and produce all the effects above mentioned on horses that drink it constantly. This was observed at a nobleman's seat near Edinburgh. On mentioning the above circumstance, accidentally, to a great breeder of cattle from the north of England, he advised the throwing some cart-loads of clay into the pond, which produced a considerable change on the water for the better.

"When pit-water is rendered impure, from stagnating too long, without being drawn off by pumping, or when it has acquired any bad smell, by filth getting into it, or full of animalcula or small earth-worms, throwing into the well a few shovels-full of burnt lime will render it sweet and fit for use.

"Horses have a delicate taste and smell, and are very nice in the choice both of what they eat and what they drink; of course, they shun, when it is in their power, every thing that is disagreeable to their senses. But when they are long restricted from drinking water, they will, in that case, offend their taste to assuage their thirst. This is evident from their readily

drinking water strongly impregnated with nitre, or with quick-lime, in certain cases, when these are given as medicine. But this restriction ought never to be laid on horses, more especially when they are labouring under any inflammatory diseases; as, in such cases, they cannot drink too much, in order to dilute their blood and promote the natural secretions. But it too frequently happens, through mismanagement, that they are forced, from necessity, to drink water which they loath, and that, of course, very sparingly; when, at the same time, if given them in a proper manner, and of a proper temperature, it might prove, in many cases, the best medicine they could have.

"Horses should never be suffered to drink too much cold water at one time. If they are disposed to this, it shows that they have been neglected in this respect; for, if they had always water at command, they would drink often, but never too much at once. For this reason, water should be offered them frequently, but not in too great a quantity. Neither should they be allowed to drink much water when they are going to perform any active exercises, as has been noticed in another place. See MANAGEMENT.

"It is, however, very refreshing to horses to allow them to wash their mouths and throat by a *glut* or two of water, after performing any severe exercise; but they ought on no account to be indulged in drinking a quantity of cold water when they are overheated. This should be particularly guarded against, as the consequences are dangerous, and frequently prove fatal to them; for, when a quantity of cold water is taken into the stomach in this heated state, when its vessels are full, and distended with blood, a stagnation of the blood in these vessels takes place, a mortification follows, and death ensues; therefore, when a horse has been overheated, from exercise, &c. small quantities of water should be given him at a time in a pail, but not till he appears to be thoroughly cooled. In very cold weather, indeed, the chill should be taken off, by mixing the water with some which has been heated. In these cases, it is likewise of service to add to it some oatmeal or bran."

The too common practice of riding horses hard after they have drank water, in order (as the phrase is) to warm it in their bellies, Mr. Clark, very properly; condemns; but walking or trotting gently, he thinks may be of use. In travelling, towards the end of a stage, if a horse is not too warm, it is very proper, if an opportunity offers, to give him a little water, but

by no means to suffer him to drink so great a quantity as to endanger internal inflammation."

To the cautions of the judicious writer from whom we have quoted, we are inclined to recommend that of avoiding the use of water that has stood long in a leaden cistern. It is well known that horses are extremely subject to the colic; and as water is very liable to unwholesome impregnation from lead, the latter may be, and no doubt frequently is, the actual, though unsuspected, cause of that malady.

**WAYED-HORSE**, in the manege, is one that is already backed and broken, and shews a disposition to the manege.

**WEANING**. The means employed to reconcile a young animal to the loss of its mother's milk are thus called. In the weaning of a foal, some take it from its dam the over-night, and put it into some empty place where it may rest, and out of the hearing of the mare. On the next morning they give him a little meat, as grass, hay, or chaff, with some clean water. In a few days he will have forgotten the dam, and may be put into a pasture with other colt-foals. See **BREEDING**.

**WEB**, or **FILM**, on the eyes. See the articles **EYE** and **FILM**.

**WEIGHTS**. Two different kinds of weights are made use of in this country: one in the merchandise of gold and silver; the other for almost all goods besides. The first we call Troy, the other Averdupois weight.

The goldsmiths divide the Troy into twelve ounces; the ounce into twenty penny-weights; and the penny-weight into twenty-four grains. The Averdupois pound is divided into sixteen ounces; and the ounce into eight parts, called drachms.

The pound of the London and Edinburgh dispensatories (which is the only one made use of in pharmacy) is that of the goldsmiths, divided in the following manner:

The Pound	} contains	{	twelve Ounces.
The Ounce			eight Drachms.
The Drachm			three Scruples.
The Scruple			twenty Grains.
The grain is equal to the goldsmiths' grain.			

The medical or Troy pound is less than the Averdupois, but the ounce and the drachm greater. The Troy pound contains 5670 grains; the Averdupois 7000 grains. The Troy ounce contains 480 grains; the Averdupois only 437½. The Troy drachm 60; the Averdupois drachm somewhat more than 27. Eleven drachms Averdupois are equal to five drachms Troy; twelve ounces Averdupois to nearly eleven ounces

Troy; and nineteen pounds Averdupois to somewhat more than twenty-three pounds Troy.

These differences in our weights have occasioned great confusion in the practice of pharmacy. As the druggists and grocers sell by the Averdupois weight, the apothecaries have not in general kept any weights adjusted to the Troy pound greater than two drachms, using for all above, Averdupois. By this means it is apparent, that in all compositions, where the ingredients are prescribed, some by pounds and others by ounces, they are taken in a wrong proportion to each other; and the same happens when they are directed in lesser denominations than the ounce, as these subdivisions, used by the apothecaries, are made to a different ounce. But these differences are now happily removed.

**WEN**, a fleshy substance, that, in different instances, has been known to grow out almost on all parts of a horse's body. The cause from which they proceed is difficult to assign. They begin usually in the skin, where the vessels are extremely small; and these, enlarging gradually, in time grow to a considerable size.

Wens are seldom painful, owing to their small beginning and slow growth; being sometimes of several years standing before they arrive to any great size. They become at last like the natural flesh, and rarely are attended with any other bad consequence than the deformity, or weight, upon the parts where they are situated. Their substance is generally fleshy, and for the most part spongy; though some are spongy in part, with a mixture of scirrhus hardness, of a scrophulous or cancerous disposition, especially when they arise among the glandular parts.

When a wen takes its origin from a tendon, or is attached to the fascia connected with the muscles, or when any part of a wen is involved with their fibres, the part generally appears, upon dissection, like so many threads laid close together; and this, according to some, is of the nature of a true scirrhus. When a wen has a communication with the *membrana adiposa*, its substance is then chiefly an accumulation of a greasy matter resembling suet; and in some cases a considerable quantity of clear water has been found.

Wens are usually contained in a cyst, which incloses the whole substance, which increases in size as its contents increase; and Gibson states this as the reason why wens and all other encysted tumours can never be perfectly cured, unless the *cyst* or *capsula* be also destroyed.

"Horses," says he, "are subject to wens



and fleshy tumours, as all other animals are, though these are seldom suffered to grow to any great size before they are extirpated. There is so much delicacy used in treating the human body, that these substances, not being painful, are often suffered to go on till they cause great deformity, or become troublesome with their weight, or are attended with some other very great inconvenience. But as we are solicitous to have every the least deformity removed from our horses as soon as any such appears, when a preternatural swelling rises on any part, trial is first made to dissolve it, and if that cannot be done, it is cut off without ceremony, or else destroyed with a caustic. Nevertheless we often see draught horses that are of small value with very large wens, even sometimes upon their joints, without making them go lame, especially those that hang loose and have their situation no deeper than the skin; and we may often see oxen and cows with very large wens upon their knees, which might easily be removed, without danger, if they were any ways hurtful.

"I was once concerned in the case of a very fine horse that had a large wen on the lower part of his neck, near the windpipe, which was cut off with a sharp instrument. It grew from a small beginning, not bigger than a walnut, to the bulk of a middle-sized melon, without pain or inflammation, but at last it became troublesome, and affected the motion of his shoulders. This substance, when it was cut off, appeared to be no other than a mass of fungous flesh, a little variegated in its colour, and probably proceeded from a rupture of some very small twigs of the jugular arteries, which, being enlarged by a continual afflux of the blood, caused so great an effusion of blood from several orifices, that it was with difficulty stopped by the actual cautery.

"When wens are pendulous and hang by a small root, the best way to extirpate them is by tying them with a waxed packthread, or a hair line, making the ligature tighter by degrees, till the substance falls off; afterwards it may be healed with a common digestive made of honey and turpentine, or by bathing it frequently with spirit of wine or tincture of myrrh. But when a wen is broad towards its insertion, or place of attachment, and has several origins, like cords or strings, it is then the safest way not to meddle with it. If the cure be practicable, it must be done by excision or caustic. The first dressing must be with dry tow, and afterwards with the common digestive. If much fungous flesh arise, it may be dressed with red

precipitate; and where most required, the fore may be strewed with precipitate and burnt alum, in powder, of each equal quantities, mixed. If yet stronger escharotics be required, equal quantities of powder of blue vitriol and of red precipitate may be used, or the part may be touched with a feather or pencil dipped in butter of antimony.

"Horses are sometimes subject to swellings on the heel of the hock, and likewise on the point of the elbow, which the French and Italians call *capellets*. These are ranked among the wens because they have some of the same qualities and resemblances, viz. they often rise to a considerable bulk, are seldom painful but when they inflame and suppurate, and therefore seldom cause sickness or lameness, and are often encysted as wens are, and have much of the same kind of contents.

"Young horses that are ticklish and given to kicking, when they are first placed to stand between bales are apt to lash out, especially when the bales hang upon ropes and chains so as to move to and fro. By that means they often strike their hams against these or against the posts, and bring on a swelling upon the tip of the hock; which, however, may be prevented, by causing such horses to be moved into close standings, and, when the injury is slight, it may be cured by bathing the part with warm water or verjuice. Those swellings that arise on the point of the elbow are thought to proceed from a horse's striking the toe of his hind-foot against his elbow in lying down, especially where his standing happens to be narrow and short. Horses may, at least, meet with such accidents where the pavement is slippery, and there is a want of sufficient litter; for then a horse may easily rub and bruise his elbows, yet we rarely see that such accidents happen to those that have roomy standings and plenty of good bedding.

"When these tumours come in consequence of any of these accidents, we find the swelling generally on one limb, and oftentimes an impression is made on the part, which shews it has been occasioned by a stroke or bruise; but when it rises on both sides, viz. on both heels, or on both elbows, and from a small beginning increases by degrees, we may then suspect it to be a spontaneous production, and more particularly entitled to the name of a *wen*.

"Those tumours called *capellets*, on the elbow, or heel of the hock, are seldom so perfectly cured, as not to leave some blemish or callosity. If they proceed from blows and con-

tusions, the same method is to be followed that has been laid down for the cure of all such accidents; viz. by cool and restringent applications. These alone will often abate such swellings, both on the hocks and elbows, without further trouble, and in time remove them; but when the vessels are broken, and the blood extravasated, they generally come to suppuration, which may be forwarded by anointing with any camphorated unctuous application; and, if the thickness of the skin retard their breaking, they may be opened with a lancet in some depending part towards one side, and not behind. This method is better than opening by a caustic, because as little as possible of the skin should be destroyed, where the parts are prominent, otherwise it would be difficult to cover the processes of the bones that form the heel and elbow; and, besides the blemish that this must leave, the cure would also be tedious. The same caution ought also to be observed in treating all tumours on the processes of any of the other bones, especially on the joints, where continual motion hinders their re-union, when they become wounded, or meet with any other accident that causes a loss of substance.

“When the matter of these tumours is all discharged, and the abscesses formed in them are dried up, which may be done with soft dossils dipped in a mixture of common turpentine, honey, and tincture of myrrh, there remains nothing further than to bathe the part once a-day with spirit of wine and vinegar, equal parts, and about an eighth part of oil of vitriol added to it by single drops. The skin after such accidents generally continues relaxed and exceedingly thickened. I have seen it at least an inch and an half on the elbow, and of a pale colour resembling an unripe cherry. When cut in this state, there has issued forth a moisture like that discharged from wounded tendons, but, by using this application constantly, the skin has shrunk gradually, and the cure been effected without leaving any callosity.

“Swellings of this kind on the heel of the hock, often differ from those on the elbow, especially with regard to their contents; the matter of the former sometimes resembling thick paste, whilst the other may perhaps contain nothing but a thin viscid fluid. In piercing them with a trochar I have seen some discharge upwards of a quart of this thin matter: and as the skin there forms a capsula that cannot be removed without an irrecoverable blemish, so this matter is apt to gather repeatedly in the manner of an atheroma. But horses of the coach breed are the most liable to such tumours, which, as they

feldom cause lameness, are therefore the less to be regarded.

“When any wenny tumours proceed from an apparent constitutional indisposition, I always found it the safest way not to be too busy with them, especially with those that seem watery, and are no ways hot or inflamed. I have known them often wear off insensibly, without any application made to them, only by keeping the horse to a clean diet, and giving him moderate exercise. But when they prove tedious and fluctuating, sometimes rising and sometimes falling, without coming to any determinate issue, and especially if there be any watery accumulation in the limbs, the best way is to rowel and purge; and, when that is quite over, to give diuretic drinks, which will probably effect a cure. We may afterwards bathe the part with vinegar or verjuice, which will strengthen it, and be a great means to prevent a relapse. But the surest and speediest cure is to extirpate these substances at once with a sharp instrument. This, however, can only be done when they do not adhere to the process of the elbow, but admit of being pulled out, and have nothing but a small neck of skin behind them. As for those that rise in the heel of the hock, they cannot be so safely extirpated, for they will be apt to leave an ugly blemish behind and disfigure the horse.”

It cannot but be perceived that this excellent practical writer has not strictly adhered to that description of fleshy redundancies which alone fall under the description of wens. Useful practical matter, however, though somewhat out of the line of more enlightened arrangements, is not without its value, and for that reason we have ventured to follow this most excellent of the writers of the old school to a greater length than some might expect.

**WHEAT**, a well-known plant, the seed of which is employed in making bread. Wheat is sometimes cut green and given to cattle, and the flour of the grain is used in horse-bread. The effects of these are little different from grass and oats, except, perhaps, in being somewhat more nutritious.

**WHIRLE-BONE**, that bone in the hinder extremity of a horse which reaches from the hip to the stifle. It is properly the thigh-bone, the upper end of which, moving round in its acetabulum or socket, when the limb is in action, obtained that name amongst farriers. See **BONES**.

**WHITE BLAZE**, a white mark upon a horse's face, descending from the forehead almost to the nose. See **MARK**.



**WHITE-FOOT**, a white mark that happens in the feet of a great many horses, both before and behind, from the fetlock to the coffin. In the manege, the horses thus marked are either trammelled, cross-trammelled, or white of all four. See the articles **MARK**, **TROT**, and **TRAMMELLED**.

**WIND**, in a horse, another name for breath, or rather for the power with which the lungs are endowed in the exercise of their functions. See the articles **BROKEN-WIND**, **LUNGS**, &c.

**WIND**, in the manege. A horse that *carries in the wind*, is one that tosses his nose as high as his ears, and does not carry his head handsomely. The difference between carrying in the wind and beating upon the hand is, that a horse that beats upon the hand shakes his head and resists the bridle; but he that carries in the wind, puts up his head without shaking, and sometimes bears upon the hand. The opposite to carrying in the wind, is arming and *carrying low*; and even between these two there is a difference.

**WIND-GALL**, a puffy kind of swelling or tumour which yields to the pressure of the finger, but upon removing the pressure recovers itself and pushes out as before. They have been thus named from a false notion of their containing nothing but air, or *wind*. These tumours are often seated on both sides of the back-sinew of a horse, above the fetlock on the fore-legs, but most frequently on the hind-legs. They are quite loose and detached from the parts on which they grow, and exhibit the same signs wherever they are met with, whether in the hocks or about the knees; for these swellings are not confined to the lower limbs only, but appear in any of those parts of a horse's body where the cellular membrane can be easily separated; and they exist, for the most part, without occasioning any pain.

Wind-galls are usually caused by riding on very hard roads, or on dry hilly grounds. Sometimes travelling horses, when they are worked too young, before the limbs are grown firm and vigorous, will have them. Gibson says they sometimes proceed from constitutional weakness, especially in bulky horses, that are somewhat underlimbed and fleshy about the fetlock joint. These, he says, he has known to have wind-galls without any strain, hard riding, or other ill usage.

When these tumours appear upon the hind-legs they never cause lameness, though such horses are often stiff behind after riding. When on the fore-legs, they always make a horse go lame at first; but afterwards that tenderness goes off in a great measure, and they

seldom go lame, but stiff, and inclinable to stumble. They generally recover, however, with a day's rest. Those flatulent swellings indeed that come in the ligaments of the hocks are always troublesome, disfigure the animal, and, unless speedily assisted, will cause incurable lameness. At first they are but small, but in time they grow to the size of a pullet's egg perhaps, and push out on each side of the hollow of the hock. Swellings of the same kind also appear above the knee, where they often precede a diseased joint. Very small similar swellings under the fore-part of the knee, in the interstices of both sides of the joint, are also dangerous; but these seldom happen, and are usually caused by some violent strain, especially when a horse falls down upon a descent with his whole weight upon his knees. The other flatulent swellings which horses are subject to seldom cause lameness, but are, for the most part, easily cured. We mean those that arise in the interstices of the large muscles of the hips and thighs, which are distended like little bladders filled with air. These come by strains and over exertion; for draught horses are the most subject to them of all others. Wind-galls that proceed from mere weakness are seldom curable, unless the constitution can be improved; but we often see horses that were subject to wind-galls when young, get the better of them as they grow to maturity.

Wind-galls that proceed from hard riding, or the other causes above mentioned, are more easily prevented than cured; for though few horses go lame with these tumours, yet they always disfigure the part where they are situated; and therefore young horses of value ought not to travel much, especially with heavy riders, before they come to their full strength. If they swell about the pasterns, and the swelling does not ascend towards the knee, but with an apparent fulness on each side the back sinew, it is to be suspected wind-galls are taking place. With a view to prevent their progress, Gibson advises us to bathe them well with vinegar or verjuice, or other powerful astringents.

But when wind-galls are grown pretty large, they feel like kernels or indurated glands. If these be in the hind legs, it is scarce worth while to meddle with them; as we see many good hacks and road horses travel long journeys with these defects without going lame; but when they are situated on the fore-legs, they are apt to make a horse trip and stumble, or at least appear very stiff after riding. In this case the cure may be attempted by mild blisters. Some merely pierce them with a lancet, but

that often inflames and renders them more obstinate, whilst blisters, often repeated, dissipate them effectually. Gibson says blistering always has this effect in those wind-galls that arise above the fetlock, and sometimes he has known blistering alone to succeed in these tumours when situated on the hocks; but this has been repeated, at times, for the space of a year or a year and a half, working the horse as usual in all the intervals. These accidents happen chiefly to coach-horses and others that draw heavy loads, and the best way to manage their blisters is this: a little blistering ointment should be laid on every other day for a week, which brings on a plentiful discharge, and when this is dried up, which generally happens in a few days, the horse may go to his usual work for three weeks or a month, after which the blistering may be repeated if it be a convenient time for the owner, or at any other season when the horse can have a little rest. Horses have been blistered in this manner six or eight times within the year, by which means they daily got some ground. The swellings gradually were reduced, the parts strengthened, and no manner of blemish has been left, nor any loss of hair, and the lameness has been entirely removed. Firing is indeed a more expeditious remedy, being but a single operation, which is seldom or never repeated; yet firing not only leaves blemishes, but Gibson asserts it is, for the most part, an imperfect cure, as there always remains a stiffness and fulness about the joint; and the only good obtained by it is, that it stops the progress of the malady, and renders a horse much more useful than he was before the operation.

For those flatulent swellings that sometimes rise near the joint of a horse's knee, if astrigent applications have not force enough to remove them, the best way is to blister without delay, for when these are seated near the knee they prove dangerous, unless speedily removed. For this reason, firing is also proper after blistering; but this should be done with a small iron, and the lines or rases made as near to one another as possible, afterwards covering the whole knee with a mercurial application.

**WINTERANA**, winter's bark-tree, called also *winterana aromatica*: the bark is called *cortex Magellanicus*, as well as *cortex winteranus*. Most writers have confounded the bark of this tree with the *cortex canella alba*. See **CANELLA**.

**WIRE-HEELS**. "Narrow heels," says Gibson, "are for the most part a natural defect, but they are often rendered incurable by bad shoeing. Some farriers hollow the quarters so

deep and so thin, that one may pinch them in with one's fingers, and think by that means to widen them out by a strong broad-webbed shoe; but this turns them narrow above and *wires their heels*, and dries up or rots the frog. The best way in all such cases is not to hollow the foot in shoeing, and pare nothing out but what is rotten or foul. If the foot be hard or dry, or inclined to be ragged, bathe it often with chamber-lye; or, boil two pounds of linseed bruised in two quarts of chamber-lye to the consistence of a poultice, then add to it six ounces of soft soap, and anoint the foot with it every day, rubbing a little of it upon the sole; or,

Take of Bees-wax, two ounces;  
Hog's lard, six ounces;  
Tar, one ounce;  
Linseed oil, as much as will make it  
into the consistence of a smooth  
ointment. Mix.

"This may be used daily in the same manner as the foregoing."

**WITHERS**. These, in a horse, begin where the mane ends, being joined to, and ending at, the tip of the shoulder-blades. The withers, when well raised, are reckoned a sign of strength and goodness. They keep the saddle from coming forward upon the horse's shoulders and neck, which otherwise would gall him, and a hurt in that part is very difficult to cure. The withers should not be too fleshy, for then they will be more subject to be galled. For the treatment of bruises in the withers, which frequently imposthume, and, for want of proper care, become fistulous; see the article **FISTULA**.

**WITHERBAND**, in the manege, a band or piece of iron, laid underneath a saddle, about four fingers above the withers of the horse, to keep tight the two pieces of wood that form the bow.

**WITHY-CRAGGED**. See **STRAIN**.

**WOLF**, a word vulgarly used to express the cancer in the breast of a woman, from its inveterate and voracious nature. But surgeons formerly used the word *lupus* to signify that kind of malignant or phagedænic ulcer, which, like a hungry wolf, eats away the flesh around it.

**WOLVES-TEETH**. A horse is said to have wolves-teeth when the teeth grow in such a manner that their points prick or wound either the tongue or gums in eating. Old horses are most liable to this peculiarity, and those whose upper overshoot their under teeth in a great degree. To remedy this, some chip off the superfluous parts of the teeth with a chisel and



mallet; but filing them down is much the best way.

**WORK.** In the manege, to *work a horse* is to exercise him at pace, trot, or gallop, and ride him at the manege. To work a horse upon *vols*, or head and haunches in, or between two heels, is to passage him, or make him go sideways upon two parallel lines.

**WORMING**, an operation performed on puppies, under an ignorant supposition that it prevents their going mad; but in reality to cure them, as it generally does, of the disposition to *gnaw* every thing in their way. It consists in the removal of a small *worm-like* ligament, situated beneath the tongue; and the part being afterwards sore for some days, the animal is thus *weaned* of his mischievous habits.

**WORMS**, a troublesome sort of vermin found in the intestines of horses as in the human body.

"There is nothing," says Mr. DENNY, "so destructive to the health and appearance of the horse as worms. When they have obtained a settlement in the intestines, neither the labour of the groom, nor the liberality of the master, will prove of any avail towards improving the animal's condition; for as fast as the chyle is formed from the aliment, which ought to be converted into blood, these numerous guests first satiate their craving appetites, and leave but a scanty supply for the exhausted system of the horse: so that a double allowance of corn would not preserve a healthy state; because the digestive organs cannot exert an extraordinary power for any length of time, without producing such a state of debility as to render them incapable of performing afterwards their proper office."

The most common kinds are the following: 1. *botts*, which many young horses are subject to in the spring: 2. those that resemble earth-worms, and which, by physicians, are called *teretes* or *rotundi*: 3. those that are about the size of the largest sewing-needles, with flat heads, called *ascarides*: 4. that species of worm called *tania*, or *tape-worm*. Whatever variety be observable in these different kinds, except the last, it consists chiefly in the difference of their size and colour, which are only accidental. We shall speak of these in their order.

*Botts*, that are found in the stomachs of horses, and are sometimes the cause of convulsions, appear to be of the same kind with those in the rectum, being only somewhat larger and of a deeper red colour. They are exactly the same in shape and figure, both having little sharp prickly feet along the sides of their bellies,

like the feet of hog-lice, which seem to be of use to fasten them more securely to the part where they are found, and from whence they draw their nourishment till they come to maturity.

The *teretes* are of the same kind with those we often see voided by children. They resemble common earth-worms in many respects, only that they are sharper at both ends, are more callous towards the middle, and do not so easily contract or dilate themselves. In children, and in grown persons too, they seldom exceed six inches in length; but Gibson says, he has known them to be passed by horses of a size larger than a man's finger, and about *eighteen inches long*, and some of them, when slit open, *full of eggs*. These, notwithstanding, are seldom hurtful to horses, further than as they hinder them from thriving.

The small worms like needles resemble those in the human body called *ascarides*; some of them are white and some of an azure colour, with flattish heads. These are very troublesome and hard to be expelled, and they expose horses, more than any of the other kinds, to gripes, and other uneasy affections of the intestines.

As to the cause of worms in horses, it is imagined that, as in the human subject, some constitutions are more inclinable to breed worms than others. Gibson says, the most usual cause of worms is foul or high feeding, which occasions crudities and slimy indigested matter in the stomach and bowels (especially in horses that have been pampered for sale) forming a proper nidus for worms. This indeed may be the case, but the primary cause of worms is that which occasions these crudities, to wit, a want of energy in the functions of the stomach and bowels, as worms are never found in animals perfectly healthy in these respects.

"The signs of worms in horses," says Gibson, "are various, according to their different kinds. The *botts* that many horses are troubled with in the beginning of summer (see *Botts*), are always found sticking to the rectum, and are often thrust out with the dung, along with a yellowish coloured matter like melted sulphur. They are no way dangerous there, but they are apt to make a horse restless and uneasy, and rub his breech against the posts. The season of their coming is usually in the months of May and June, after which they are seldom to be seen, and rarely continue in any one horse above a fortnight or three weeks. Those that take possession of the membranous portion of the stomach, are extremely dangerous in causing convulsions, and are seldom discovered

by any previous signs, before they bring a horse into violent agonies."

The *teretes* or earth-worms give little disturbance to a horse, and would hardly be discovered, unless they were seen now and then to come away with the dung. Frequently horses void one or two, and no more; and sometimes they will void pretty large quantities of the young brood, not much larger than the *ascarides*, only of a red colour, and not white, as the latter generally are. They are most usual in autumn, or the beginning of winter, though a horse shall now and then void one or two of these at other times of the year.

The *ascarides*, or small needle-like worms, are very troublesome to horses, breed at all times of the year, and often when one breed is destroyed another succeeds. These are not at all dangerous, yet when a horse is pestered in this sort of way, though he will go through his business tolerably well, and sometimes feed heartily, yet he always looks lean and jaded; his hair stares as if he was sickly, and nothing that he eats makes him thrive. That he feels pain too is plain, for he often strikes his hind feet against his belly, which shews where his grievance lies, and is sometimes griped, but yet without the very violent symptoms that attend a colic or strangury. He never rolls or tumbles, but only shews uneasiness, and generally lays himself down quietly on his belly for a little while, and then gets up and begins to feed; but the surest sign is, when a horse voids these worms with his dung.

With regard to the cure, if a horse be troubled with botts, Gibson says, he may be relieved without much expence or trouble, only by giving him a spoonful of favin, cut very small, once or twice every day, in oats or bran moistened; and if three or four cloves of chopped garlick be mixed with the favin, it will do better, for garlick is of great service in these complaints. Horses that are troubled with botts ought to be purged with calomel and aloetic purges before the weather grows too hot; and if they be kept to a clean diet after this, it will be a great chance if ever they are troubled with them any more. As the botts generally happen about the grass season, those horses that are turned out to grass often get rid of them there, by the first fortnight's purging; and therefore those that have the convenience of a good pasture for their horses, need not be very solicitous about giving them medicines.

The earth-worms, which some writers call *teretes*, *rotundi*, or *lumbrici*, are also best conquered by calomel and occasional aloetic purges,

for worms often come away in purging, when, till then, it has not been known that the horse was troubled with them; and it has been observed, after these have been voided, that the animal has thriven better, grown more lively, and shewn more alertness at his business. There can scarcely be a better plan than is supplied in the following formulæ recommended by Mr. Denny:

Take of Calomel, one drachm;  
Aniseeds, in powder, half an ounce;  
Treacle, enough to make a ball.

This is to be given in the evening; and the next morning the following is to be administered:

Take of Succotrine aloes, in powder, one ounce;  
Ginger, in powder, two drachms;  
Treacle, enough to make a ball.

The foregoing bolus and purgative ball must be repeated, with an interval of nine days, until the horse has taken three doses. Then we are advised to give the following alterative powder, daily, for about a month. This process does not require any change of diet, or involve any hazard from the effects of cold:

Take of Ethiops mineral,  
Crude antimony, prepared,  
Aniseeds, in powder, half an ounce.  
Mix them.

The treatment of the horse during this course of worm medicines is that in common cases of physic.

Some prefer giving Barbadoes aloes for the removal of worms, thinking it the more efficacious because its operation is very rough. Gibson says, it may be given to hackneys and other horses of small value; but he never found it more efficacious than the succotrine, at the same time that it exposes a horse more to gripes and other dangerous disorders, unless it be properly managed. The following he gives as a cheap purge of this kind, and well corrected:

Take of Barbadoes aloes, one ounce;  
Salt of tartar, two drachms;  
Ginger, grated, a drachm and a half;  
Oil of amber, a middling spoonful;  
Syrup of buckthorn, sufficient to make a ball.

To this we see no objection, except as to the quantity of aloes, which would be too considerable even if of a milder sort. Yet most of the common farriers do nothing more than



work an ounce of the coarsest aloes into a ball before a warm fire, and when they have dipped it in oil, give it without any other preparation. But this sort of treatment is unfit for any horse that we set a value upon.

The kind of worms called *ascarides* sometimes come away from a horse in great numbers with the help of a purge, and some get quite clear of them with purges only. But this does not very often happen, for the horses that breed *ascarides*, above all others, are subject to slime and foulness in their intestines. In the human body *ascarides* are thought to be bred in the rectum, near to the fundament, but in horses no other kind than botts usually adhere to that gut. On the contrary, these worms in them seem to be lodged about the beginning of the small intestines near the stomach, where they feed on the alimentary parts of the chyle. The botts, in a horse, are often seen sticking near the sphincter ani, and are continually dropping away with the dung. But the *ascarides* are seldom seen there, except when the animal has had a purge given him, or when he falls into a natural purging, which often happens from the irritation of the bowels, and then they come away in very great numbers, accompanied with much slime and mucus. Botts seldom alter a horse's looks, but these not only make a horse grow lean and look emaciated, but on opening his mouth one may perceive a more than ordinary languid whiteness, and a sickly smell, instead of that liveliness of colour that is always perceivable in the mouth of a sound and vigorous horse. So that, whatever be the primary cause, these worms seem in a great measure to proceed from a vitiated appetite and a weak digestion, which renders them the more difficult to be removed; for which purpose recourse must be first had to the foregoing remedies, and after them, such medicines as are proper to strengthen the stomach, promote digestion, and give tone to the solids.

Gibson's treatment of a horse that is subject to these worms is the following, with the abridgement of some few inefficient ingredients:

Take of Calomel, prepared, two drachms;  
Diapente, half an ounce;

Make these into a ball, with a sufficient quantity of conserve of roses, and give it in the morning, keeping the horse from meat an hour or two before and after the dose.

The next morning administer a moderate aloetic purge, taking great care to keep the horse from wet, or from any thing that may

expose him to take cold. The above calomel ball, and the purge, may be repeated in six or eight days; and again in six or eight days more. Or the following mercurial purge may be given, which will be less troublesome and no less efficacious:

Take of Crude quicksilver, two drachms;  
Venice turpentine, half an ounce.

Rub the quicksilver with the turpentine in a mortar till no particle of the former appear; then add,

Oil of savin, thirty or forty drops;  
Succotrine aloes, in powder, half an ounce;

Ginger, grated, one drachm;  
Syrup of buckthorn, enough to make it up into a ball.

Let one of these mercurial purges be given in the foregoing manner, viz. one in six or eight days, with all the same precautions. It will work mildly, and with little or no griping or sickness.

Another mercurial purge, which Gibson says is proper to destroy worms and to cleanse the first passages, is the following:

Take of Diagridium,

Calx of antimony,  
Calomel, of each two drachms;  
Succotrine aloes, six drachms;  
Ginger, grated, one drachm;  
Oil of savin, cloves, or aniseeds,  
thirty or forty drops.

Syrup of buckthorn, enough to form the ball.

To be given as the preceding.

When a horse has gone through a course of these mercurial purges, the author advises the following drink to be given two or three times a-week, or till the horse begins to thrive and look healthy:

Take of Rue,

Chamomile flowers,  
Horehound, of each a handful;  
Galangals, bruised in a mortar, three drachms;  
Liquorice root, sliced, an ounce.

Boil these in a quart or three pints of forge-water fifteen or sixteen minutes, in a covered vessel, and keep it covered till cold, then strain it through a piece of coarse canvas, and give it in the morning upon an empty stomach.

"Some," says Gibson, "have a great opinion of powder of tin as an infallible cure for worms.

But it is very troublesome to make, and perhaps not so infallible as some have imagined. Tin is prepared by melting down any quantity of it in a crucible, pouring it hot into a wooden bowl, and rolling it round till part of it is turned to a greyish powder. Then melting down the remaining part, and rolling it again, continuing this operation till all that can be reduced to powder is obtained from it. This may be given to half an ounce or six drachms." We should rather advise a dose of three or four ounces; half an ounce to an ounce being commonly given to children.

"Most of the *preparations of antimony*," continues the author, "are efficacious for destroying worms: *sulphur* is also good in all such cases; and even *crude antimony* in fine powder, given with equal parts of sulphur, often succeeds, viz. an ounce in the morning and another at night: liver of antimony, *crocus metallorum*, or *stibium*, has also the same effect. Ethiop's mineral, or the *mercurius alkalifatus*, viz. two drachms of the latter, or half an ounce of the former, made into a ball, with conserve of roses, or incorporated with a sufficient quantity of any cordial ball, and given twice or three times a-week, for a fortnight, is of great efficacy. Powders made of cinnabar of antimony, with gum guaiacum, as in the farcy, will effectually destroy worms after purging and other necessary evacuations, and be no hinderance to a horse's business. But if a horse be of a weakly constitution, and a bad feeder, we would above all things recommend the last-mentioned bitter draught to be also exhibited, which will promote a good appetite and help his digestion. When worms seem to have been bred by high feeding, want of air and due exercise, or from unwholesome food, they may be often removed by a contrary regimen, without any medicines, or at least with the help of a very few; sometimes with rue and garlick, favin, tanfy, and other vegetable remedies. But when worms are the consequence of weak bowels, or owe their production to any fault in the constitution, the cure will then be difficult and tedious, and may require an alteration or change of the whole habit of the body before that can be effected."

Before we close this article we must not fail to notice a kind of worms which are frequently fatal to the gallinaceous tribe. A curious account of these is given by Mr. Weinsenthal in the Medical and Physical Journal. The inconvenience produced by these creatures is at first but slight: however, it gradually becomes more and more oppressive, until it ultimately destroys. Very few indeed recover; they languish, grow

dispirited, droop, and die. It is found, on dissection, that these symptoms are occasioned by worms in the trachea. The author says he has seen the whole of it completely filled with these worms, and has been astonished at the animal's being capable of respiration at all under such circumstances. A representation of these animalcula, one of the natural figure, and one magnified, are given in Plate I.

The small figure represents the worms of their natural size, found in the trachea of chickens and young turkeys: the large figure, the same magnified. They are of a reddish colour, and at first view resemble the human lumbricus; but when examined, are materially different. When exposed to the microscope, they are found to have an orifice or mouth at one end, formed for suction; the other end, as far as it can be ascertained, is imperforated. Through the integuments is seen the intestinal tube, much convoluted, like that of the lumbricus.

No effectual remedy, it seems, is known against these most destructive animals. They have indeed been drawn out of the trachea by means of a feather, stripped from near its end, which is passed into the larynx and twisted round till it engages one or two of the worms, which are extracted, but without any relief to the animal.

**WOUNDS.** A wound is a solution of continuity in the soft parts of an animal body, made by a hard or sharp instrument. But it may be observed, that obtuse instruments wound, and sharp ones cut into the bones. Horses and other cattle are exposed to various accidents of this kind, and as the treatment required is, as nearly as possible, that which is required in wounds of the human body, we shall draw our account of wounds from the best surgical writers.

Wounds that are superficial, when cleaned from the blood, &c. are perceptible to the sight; but when they are too deep to be seen into, it is requisite to examine them either with the finger or with a probe. Where the wound is too small for the finger, a bougie is better than a metal probe, on account of its flexibility, especially where the wound takes a winding direction. In examining a wound, we should know the attitude of the patient when he received it, the kind of weapon, how far it penetrated, how it was directed, with what force the blow was given, &c. It should also be observed, what kind of fluid discharges do or did flow from the wound. The knowledge of these, with the knowledge of the animal frame, the



use, &c. of each part, enable us to judge rightly of the nature of the wound, its consequences, and method of cure.

The danger from a wound will be as the size of the vessels that are divided, and the importance of the injured part with respect to life. The nearer a wound is to a vital part, the more dangerous it is. Wounds in the joints are healed with difficulty; so are those that are situated in any part subject to constant motion, as in the lungs or belly. The attending symptoms render a wound more or less dangerous. Dividing a principal artery in a limb, endangers mortification; a principal nerve, insensibility, and an atrophy. Separation of a tendon destroys as much motion as depends on the muscle connected with it. A wound in the medulla spinalis causes death, or a mortification in the lower parts. An immoderate suppuration in a deep wound, by absorption, may cause a hectic fever, and consume the patient in a marasmus. Great loss of blood endangers a dropsy. A wound in the breast and lungs, when healed, may be the occasion of a phthisis pulmonalis; and in any other considerable organ, an ulcer may remain, and prove the source of a hectic fever, or of a consumption; but great caution is necessary in determining the prognostics of wounds, particularly those which penetrate into the breast or belly. on account of the different situation of the viscera, of which we have no means of judging accurately in brutes.

The different states of a wound are included under those of *digestion*, or the *discharge of matter*; *incarnation*, or *filling up with new flesh*; and *cicatrizatio*n, or *skinning over*.

As for the treatment of wounds, the following particulars should be observed. When the extraneous bodies are extracted, if it can be done prudently, the hæmorrhage suppressed, all morbid tension in the wounded part removed, and the lips of the wound, where this is required, brought properly together, the dressings may be pledgets of soft lint covered with one of tow, spread with some digestive ointment, and large enough to cover the whole; these may be secured by means of such bandages as the situation of the wound best admits of: the first dressings usually remain three or four days, or until the discharge of matter renders the separation of them easy. After the first are removed, the dressing may be repeated every twelve or twenty-four hours, according as the discharge is more or less abundant or acrid. If after the first dressing a warm digestive is required, add to the ung. resinæ flav. a little of the ol. terebinth. or bals. capivi. These appli-

cations need not be warmed, except when very cold; after spreading the pledget, its surface may be just warmed by holding before the fire: each time that the surface of the wound is cleansed, it should be performed by dabbing it gently with soft lint, and not wiping it, lest the tender granulations should be destroyed. The surface of the wound should not be made quite dry, but is better for being left somewhat moist, for thus the digestion is less interrupted.

Most writers have observed, that the principal interruption to the healing of a wound, made with a sharp instrument, is the fungus. This, however, may be suppressed by dry tow or lint and a proper compress upon it: or if it advance above the surface of the skin, we need only to touch its edges with some escharotic, as blue vitriol. But it sometimes happens that an obstruction to healing is the *flabbiness* of a wound, which is generally removed by dabbing it, at each dressing, with lime-water and tincture of myrrh, or with a solution of corrosive sublimate. Thus, if an ill constitution or bad habit of the body is no impediment, wounds on the exterior parts are generally soon healed.

When the wound is filled up with flesh, powdering the surface with prepared *lapis calaminaris* will usually effect the last intention of cure, i. e. the *cicatrising* of the wound.

There are many accidents which occasionally are attendant on wounds in one stage or other, such as fever, inflammation, &c. the management of which will be learned from what is already said under the different articles in which they are noticed. See INFLAMMATION, &c.

When a small artery is wounded, if it be quite divided it retracts, and the hæmorrhage is soon spontaneously restrained; if it is punctured, or partially divided, if it can conveniently be come at, it may be wholly divided, or the wound enlarged, and then the artery may be tied, if proper pressure proves ineffectual. When a large artery is punctured or divided, it must be taken up and secured with a needle and ligature.

Wounds sometimes penetrate the cavity of the breast and belly, and sometimes injure one or more of the viscera; the first are known by the probe, the latter by the discharge that issues from them; if the symptoms attending a wound that penetrates into the cavity of the breast or belly are favourable, and there is no discharge from any of the viscera, we may conclude that the viscera are unhurt; in which case, after excluding the air that may have rushed into these cavities, we may treat them as simple wounds. If any of the viscera have protruded and are un-

hurt, return them with all speed; but if wounded, use the glover's suture, leaving three or four inches of the ligature out of the wound. If the protruded viscera have been exposed to the air, it may be necessary, before the return of them, to use a fomentation of warm milk and water, or some thin starch. In all these cases flannel is the best bandage, because it gives way and retreats as the breath requires.

Wounds in the principal internal *blood-vessels* are all deemed mortal; but blood is sometimes discharged from smaller vessels into the cavity of the breast or of the belly; if this happens in the breast, it occasions great difficulty of breathing. To discharge this blood, if the wound be in the lower part of the breast, push back the lungs with a probe, that the blood may pass out; if the wound is in the upper part of the breast, an opening must be made at the most depending part, allowing the other to close. But, until the hæmorrhage appears to have ceased, which may be judged of by the strength and equality of the pulse, and the warmth of the patient's extremities, any operation will be useless. When the opening is made, the expulsion of the matter is assisted by the efforts of respiration. In these cases the patient must be kept still, and opium given if a cough attends. If blood is poured into the belly, there will soon be laborious breathing, anxiety, and intermitting pulse, &c. If the discharge of blood is small, the patient sometimes recovers, but, if considerable, it generally proves fatal.

When a *nerve* is wounded, a variety of alarming symptoms comes on in proportion to the tenderness of the part it is attached to, and the peculiar irritability of the constitution. When the pain is extreme, it sometimes is relieved only by dividing the nerve. This accident is soon discovered by the sharp ichor which distils from the part, and its excoriating the circumjacent parts. When a tendon is wounded, the same symptoms do not follow as when a nerve is injured. Swelling occurs, though not suddenly, advancing gradually with the inflammation. The most common applications to wounded nerves and tendons have been of the spirituous sort, such as the *ol. tereb.* &c. but they are productive of the worst symptoms. Instead of these, put the limb into the easiest position, keep the wounded part free from cold air, avoid spirituous and hot applications, and in their stead apply warm poultices, having first covered the wound with lint; or instead of the poultice, cloths may be applied after dipping them in warm brandy and vinegar mixed in equal parts. Fomentations may be used be-

fore the application of the poultice, if inflammation attends, or seems to be approaching; or if the case admits of it, the part may be soaked in warm water.

Wounds in the *joints*, when they are inflicted with cutting instruments, or with heavy weapons falling on them, are attended with danger. Though the wound is small, its consequences are often grievous, from irritation, from the admission of the air, from the loss of synovia, &c. Much depends on the habit. From a large wound in a joint, caused by a fracture, nothing remarkable has followed; yet fatal consequences have been the result of a small one in other instances. However favourable appearances may be, a guarded prognostic should always be given. Penetrating wounds of the joints almost always are dangerous. A mere incised wound into a joint, from letting in air and injuring the ligamentous parts, has often proved fatal. The two great consequences to be avoided in wounds of the joints are inflammation and pain; the first is to be attempted by bleeding, and pursuing the antiphlogistic plan; the latter, by the position of the limb and by opiates. The most relaxed position of the limb is the best. If no tumefaction comes on, emollient applications are not wanted; but if tumefaction, tension, &c. appear, immediately apply emollients. There is a symptomatic fever generally attendant, exclusive of any other circumstances, and this is sometimes attended with such a discharge as to reduce the patient greatly.

"When horses happen to be wounded on the joints," says Gibson, "especially when they break their knees by falling down, or when they cut or over-reach; in all such cases a pledget laid over the wound, spread with common digestive, and bound on with a roller of broad tape or list, will seldom fail of a speedy cure, unless a horse also have the grease, and then the case must be treated as such. If any small abscesses be formed under the skin, these may be opened by incision, in order that no lodgment may be left for the matter. But in the knee, and all the other joints, care must be taken to prevent inflammation, or to abate it if already begun, by the use of proper fomentations or poultices. These effects, however, are more frequent in punctured wounds, that have been caused by thorns or small splinters, than in wounds that are larger. Horses are sometimes in very great pain with punctures on their knees, hocks, or pasterns, and sometimes with contused wounds that have been apparently inconsiderable, and without the least sign of in-



flammation. But these, though in themselves somewhat dangerous, are generally relieved by the timely use of emollient fomentations and astrigent remedies."

The same writer directs the manner in which fomentations are to be applied to horses. He advises in this making so much at a time scalding hot as is necessary for once fomenting, wringing out woollen cloths in the liquor as dry as possible, and applying them five or six times alternately one after another, as often as they begin to cool, which may be done morning and evening, or oftener, till the end is answered. Used in this manner, they give ease, abate inflammation, greatly increase perspiration, and contribute to cleanliness. Gibson asserts that the least appearance of a mild suppuration that is observed, on the use of fomentations in wounds of the joints or their membranes, indicates that the danger is generally over; for though the running from wounds in those parts, is usually small in quantity, unless from long continuance, this small discharge in a sound-constituted horse, he says, gives as speedy a relief as a profuse running from parts of a different texture. "I can therefore," says he, "recommend this method from frequent experience, as the most successful in all contused wounds or punctures upon the joints, or in the tendons, or the coats of the blood-vessels, especially when the neck or the plate-vein happens to swell after bleeding, and for rowels, when they have a disposition to gangrene; and in all cases, where a mortification is threatened." He justly reprobates the common method of treating the latter case, which is, "when a substance grows on the neck by festering after bleeding, and want of a sufficient vent for the matter, to put in a caustic of blue vitriol, and sometimes a little corrosive sublimate, or arsenic, which, with the falling out of the eschar, makes a cure only with the loss of the vein."

This method, he observes, frequently fails, and leaves a large swelling, which extends upwards towards the ear, causing fresh imposthumations; so that he has been forced afterwards to apply fomentations to remove these symptoms, and these, he says, he never knew to fail of the same success as in the following case:

"On a very fine horse that had been bled in the plate-vein for a lameness in his shoulder, there grew a hard oval swelling about the size of a goose's egg, extending upwards towards his brisket, and all down his leg, and attended with excessive pain. Nothing issued from the orifice but a thin water. The horse had a considerable fever, deadness in his looks, and all

the other symptoms of a beginning mortification. He was fomented, however, three or four times on the first day, in the manner above directed. A little speck of white matter appeared in the orifice the day following, without any stench. The horse, at the same time, began to feed, and by continuing the fomentations twice a-day, and also applying pledgets of lint dipped in *Ægyptiacum* and oil of turpentine, he was perfectly cured, in little more than the space of one week, both of the threatened mortification and lameness."

There yet remains to be considered a species of wounds requiring a peculiar management, from the variety of extraordinary circumstances that may attend them; we mean *gun-shot* wounds. These, when they take place in horses, require a treatment almost exactly similar to the same kind of wounds in the human subject, since there can exist no other difference than what arises from the stronger powers of restoration in the former.

Gun-shot wounds can be considered in no other light than contused wounds. In those made by a musket or pistol ball, the most immediate considerations are to extract the ball, or any other extraneous body which may have lodged in the wounded part, and to stop the hæmorrhage, if there be an effusion of blood from the rupture of some considerable artery.

It is frequently necessary to enlarge the wound, in order to extract the ball; and if it has gone quite through (provided the situation of the part wounded will admit of its being done with safety), the wound is to be laid freely open through its whole length; by which means any extraneous body will be more readily removed, and the cure facilitated.

In order to get at the ball, or any other foreign matter, probing is to be used as sparingly as possible; and this must evidently appear to any one who will only consider the nature of the symptoms attendant on penetrating wounds of the breast or belly, either from a bullet or sharp instrument; the thrusting in a probe to parts under such circumstances being unavoidably a fresh stab on every repetition of such practice. If probing be necessary, the finger should be preferred as the best and truest probe, where it can be used; where it cannot, a bougie may answer the purpose.

If a ball, or any other foreign body, happens to be lodged near the orifice, or can be perceived by the finger to lie under the skin, though at some distance from the mouth of the wound, we should cut down to it, and take

it out; but when it is sunk deep, and lies absolutely beyond the reach of the finger, it must appear evident, upon the least reflection, that thrusting first a long probe in quest of the bullet, and then, as has been practised likewise, a longer pair of forceps, either with or without teeth, into a wound of that kind, though with a sort of certainty to extract it, must either contuse, or irritate and inflame, the parts to a greater degree; and, consequently, do as much or more mischief than the ball did at first by forcing its passage such a length of way. And should they, at the same time, lay hold of any considerable artery or nerve along with the ball (which can scarce fail of being the case), what hurtful consequences would attend such a proceeding! Nor would attempts of this sort be less injurious, in case a bullet should happen to be lodged in the cavity of the belly or breast. Such attempts are the less necessary, because a great number of instances have occurred, where balls have quietly lodged in several parts of the body, till, after many years, they have worked themselves a passage towards the surface, and were very easily extracted, and many where balls have been entirely left behind without any ill consequence.

In case the wound be occasioned by a musket or pistol shot, and of course but small, it will be deemed necessary to *dilate it* without delay, provided the nature of the part will admit of this with safety; for in wounds near a joint, or in very membranous or tendinous parts, the knife, as well as forceps, should be put under some restraint; nor should any more opening be made than what is absolutely requisite for the free discharge of the matter lodged within.

Where the wounded animal has not suffered any great loss of blood (and this is generally the case), it will be advisable to open a vein immediately, and take from the same a large quantity; and to repeat bleeding, as circumstances may require, the second, and even the third day. Repeated bleedings in the beginning draw after them many advantages; they prevent a good deal of pain and inflammation, lessen any feverish assaults, forward the digestion, and seldom fail to obviate imposthumations, and a long train of complicated symptoms, which are wont otherwise to interrupt the cure, miserably harass the poor patient, and too often endanger his life. Even where the feverish symptoms run high, and there is almost a certainty that matter is form-

ing, bleeding, in that state, is very frequently of great advantage.

If it so happen that a gun-shot wound has penetrated any of the large joints, and, in passing through them, fractured the ends of the bones, it will then be found for the most part impossible, let the skill or abilities of the surgeon be ever so great, to preserve both the life and limb of the patient. The reason of this is, that the access of air to the cavity of the joint excites such a violent inflammation as must certainly end in gangrene; and, therefore, for the most part, it will be proper, as soon as possible, to destroy the horse.

Gibson's treatment of gun-shot wounds, though more humane and judicious than was the fashion of his time, will not wholly bear repetition. His advice to pour in spirits of wine, and to introduce *tents* dipped in turpentine, honey, and tincture of myrrh, would by no means be acceptable to the enlightened veterinarian of the present day. The following observations of that respectable writer, however, are rather less at variance with existing opinions.

"Where a ball," says he, "has penetrated quite through any part, both orifices must be *kept open* till the wound is filled up with new flesh, and no bad symptoms remain, as pain, swelling, or inflammation, which in those gun-shot wounds that enter the bones as well as the flesh would denote the existence either of extraneous matter or of splinters, which must be removed by gradually enlarging the most convenient orifice. But in most internal wounds this is unnecessary, because the bullet or whatever else inflicts the wound can seldom be brought out by the same way it entered. I have known leaden bullets lie many years in men, especially in the abdomen, without any great pain or danger, and those that have gone deep in the flesh and beyond reach, make sometimes their way afterwards from places where they could never be expected to appear. Many extraordinary instances of this kind are related in books of surgery, and in the transactions of the learned in several parts of Europe.

"I have known bullets pierce through both flesh and bones in men, making a round smooth passage, like an auger-hole, and been as easy of cure as a *flegb*-wound, except when they have penetrated or grazed on the joints. In these cases, horses may be rendered useless, even though the wound be cured. If the bones are splintered the case will always be dangerous,



especially if the practitioner has not had experience to know both the time and manner how they are to be treated; for loose splinters should not be suffered to remain where their continuance would endanger a gangrene, nor be removed while their removal would create an excess of pain. But in such circumstances emollient poultices are the most likely to prepare them for separation, so as they may at length be brought away with little or no inconvenience, only by the use of a common digestive. If a bullet, a splinter, or any other extraneous body that has been driven a great way downwards from its entrance, can be felt on the outside, a counter opening in that case will be necessary, and this both facilitates the cure, and renders it expeditious. But in all such operations, regard must be had to the situation of the part, to avoid as much as possible wounding the nerves, tendons, or larger blood-vessels."

He observes, very justly, that in dressing gun-shot wounds, it is necessary to avoid all unctuous applications, which encourage the growth of fungous flesh. He advises us to dress the wound with turpentine, mixed with honey or the yolks of eggs, or with honey and turpentine. "I have always observed this method," says he, "to be the most safe and efficacious in the gun-shot wounds of horses; and if fungous flesh arise, to which some constitutions are more liable than others, the part may be strewed with a little red precipitate finely powdered, or dressed with lint dipped in vitriol-water, and squeezed dry, or precipitate may be mixed with the digestive, and this in a suitable proportion to the luxuriancy of the granulations. When a bullet chances to enter the cavity of the body, and to be lost there, if it happen to slide on the principal viscera without wounding them, especially those of

the abdomen, there will scarcely be any thing further necessary than to cure the external wound.

"If a symptomatic fever arise, which often happens in gun-shot wounds, bleeding is proper, with laxative clysters, and the diet should be chiefly scalded or moistened bran, with water-gruel. Sometimes nitre, cream of tartar, and such-like opening and cooling remedies, may also be given; and if the wound becomes an ulcer, which frequently happens in gun-shot accidents near the joints and membranous parts, it must be treated according to the directions laid down for the cure of ulcers in general."

WRACK, or SEA-WRACK, a marine plant, otherwise called SEA-TANG, or SEA-OAK, from the resemblance of its leaves to those of the oak tree. See the article KALI. With this plant surgeons make a cataplasm, by bruising a quantity of it, and applying it in cases of scrofula, or white-swelling, but more particularly glandular tumours. Where this cannot be got, sea-water and oatmeal formed into a poultice have supplied its place. There is no reason why the tumours and ill-conditioned sores of brute animals should not be benefited by similar applications.

WRENCH, or STRAIN. See the articles SHOULDER and STRAIN.

WRIST, in the manege. The bridle-wrist is that of the left hand. A horseman's wrist and his elbow should be equally raised; and the wrist should be two or three fingers above the pommel of the saddle. To ride a horse from hand to hand, *i. e.* to change hands upon one tread, we need only to turn the wrist to that side we would have the horse turn to, without advancing the hand at all. But if the horse stops, the use of both legs is required. See the article HAND.

## X.

### X I P

**X**ANTHIUM, lesser burdock, a genus in Linnæus's botany. He enumerates five species.

**XERASIA** (from ξηρος, *dry*), a species of *alopecia*, consisting in a dryness of the hairs for want of due nourishment, whence they fall off.

**XERODES** (ξηρωδες), expresses any tumour attended with the property of dryness.

**XIPHIA** (ξίφιας, or ξίφος, *ensis*, a sword);

### X Y L

whence some parts having resemblance thereunto, are compounded; as, *Xiphoides*, the same as **ENSIFORMIS CARTILAGO**, which see.

**XYLO-ALOES**, is the aloes-wood, called also *agallochum* (from ξυλον, *lignum*), whence it is also compounded with many other things; as *xylo-cinnamomum*, *xylo-guaiacum*, which are the woods of the cinnamon, guaiacum, &c.

## Y.

### Y E R

**Y**ARD, a popular name for the penis of an animal. See **PENIS**.

**YARD-FALLEN**, a vulgar term for a supposed malady in a horse, that, from want of strength in the muscles of the part, cannot draw his penis within the sheath, so that it hangs down between his legs. This is merely the effect of erection, and not a disease.

**YELLOW**S. See **JAUNDICE**.

**YERK**, or **STRIKE**, in the manege. A horse is said to *yerk*, or strike, with the hind-legs, when he flings and kicks with his whole hind-

### Y I E

quarters, striking out the two hinder legs near together, and even to their full extent.

**YERVA**, is by some used for the *contrayerva*, a root formerly in esteem for its alexipharmic qualities.

**YEW-TREE**, the *taxus*, Linn. The eaves of this tree, cut small, have been given to cattle as an anthelmintic remedy; but it is said to be poisonous to some.

**YIELD**, or *slack the hand*, in the manege, is to slack the bridle, and give the horse head.



## Z.

**ZACCHARUM**, and according to some *Zuscharum*, was the ancient name of what we now write *Saccharum*, sugar.

**ZACINTHA**, wart-succory, a species of *lapafna*.

**ZAFRAN**, or **ZAFFRAN**, signifies any thing of a yellowish colour, and anciently for that reason applied chiefly to ochre : but now it obtains only in the crocus, which we write commonly, in English, *saffron*.

**ZAFFRE**; ore of cobalt, well torrifed or calcined, then reduced to powder, and mixed with twice its weight of flints or quartz, also powdered, forms the substance which is thus named.

**ZAIN**, in the manege, the French appellation for a horse of a dark colour, neither grey nor white, and without any white spot or mark upon him.

**ZALACCA**, a species of *calamus*.

**ZARUTHAN**, a hard and unequal tumour of a woman's breast, attended with pain, not continual, and a burning heat, much like that in a cancer, whence it is called a *spurious cancer*.

**ZEA**, maize, or Indian corn, a genus in Linnæus's botany. He enumerates one species. Indian corn is sometimes given to pigs, but more frequently, when ground, to fowls. It is perhaps the most nutritious grain, except wheat, either as human sustenance, or as provender for brute animals, as Count Rumford has shewn in his Essay on Food.

**ZEDOARY**, the root of an East-Indian plant. It is the root of the *kæmpferia rotunda* Linn. The College have retained it in their Pharmacopœia ; it is directed in the Confectio Aromatica.

**ZEOLITES**. It is a particular kind of fluor, which dissolves very slowly in acids, and without any effervescence. Cronstad takes notice of it. It may be called *zeolites fluor*, as it belongs to the fluors.

**ZERNA**, an ulcerated impetigo : some express by it *LEPRA*.

**ZERUMBET**, broad-leaved wild ginger, a species of *AMOMUM*.

**ZINC**, a bluish white metal, crackling in be-

ing bent, like tin, and quickly breaking ; about seven times specifically heavier than water. The properties of this metal have been very little known till of late years: its ore, the *lapis calaminaris*, and white vitriol, in which it is found united with the vitriolic acid, have been long used in the shops. Zinc is directed in the College Pharmacopœia to be calcined ; this is called *zincum calcinatum*, or commonly *flores zinci* : it is also directed to be purified, and is called *zincum vitriolatum purificatum* : a solution of the *zincum vitriolatum*, is directed, with the addition of camphor : this preparation is called *aqua zinci vitriolati cum camphora*, formerly *aqua vitriolica camphorata*. *Zincum vitriolatum* also enters the *aqua aluminis composita* ; this was formerly called *aqua aluminosa Bateana*.

**ZINC FLOS**, a genus in the order of cryptometalline flosses.

**ZINC-STONE**, a genus in the order of cryptometalline stones.

**ZINGIBER**, ginger. See **GINGER**.

**ZOOLOGY** (from ζῷον, *animal*, and λόγος, *sermo, discourse*), any treatise upon living creatures. The term is most commonly applied to that part of the materia medica, which is supplied from animals.

**ZOOTOMY** (from ζῷον, *animal, an animal*, and τέμνω, *feco, to cut*), is the dissection of living creatures, in anatomy.

**ZYGOMA**, the same as *os malæ*, or *jugale*. See Plate V.

**ZYGOMATIC MUSCLE**, a muscle that comes from the *zygoma*, and passing obliquely, is inserted near the angle of the lips. It helps to draw the lips obliquely aside. This, in the horse, is shewn in Plate XII. See the description of parts in "*the Head*," under **HORSE**.

**ZYGOMATIC PROCESS**. Both the former are derived from ζυγος, *jugum, a yoke*. See **MAXILLA SUPERIOR**, and **CRANIUM** ; also Plate V. and the description under **BONES**.

**ZZ**. The ancients signified *myrrh* by these two letters, from ζμυρρη, a name for it common amongst them ; but later writers used them only for *zinziber, ginger*.

THE END.











